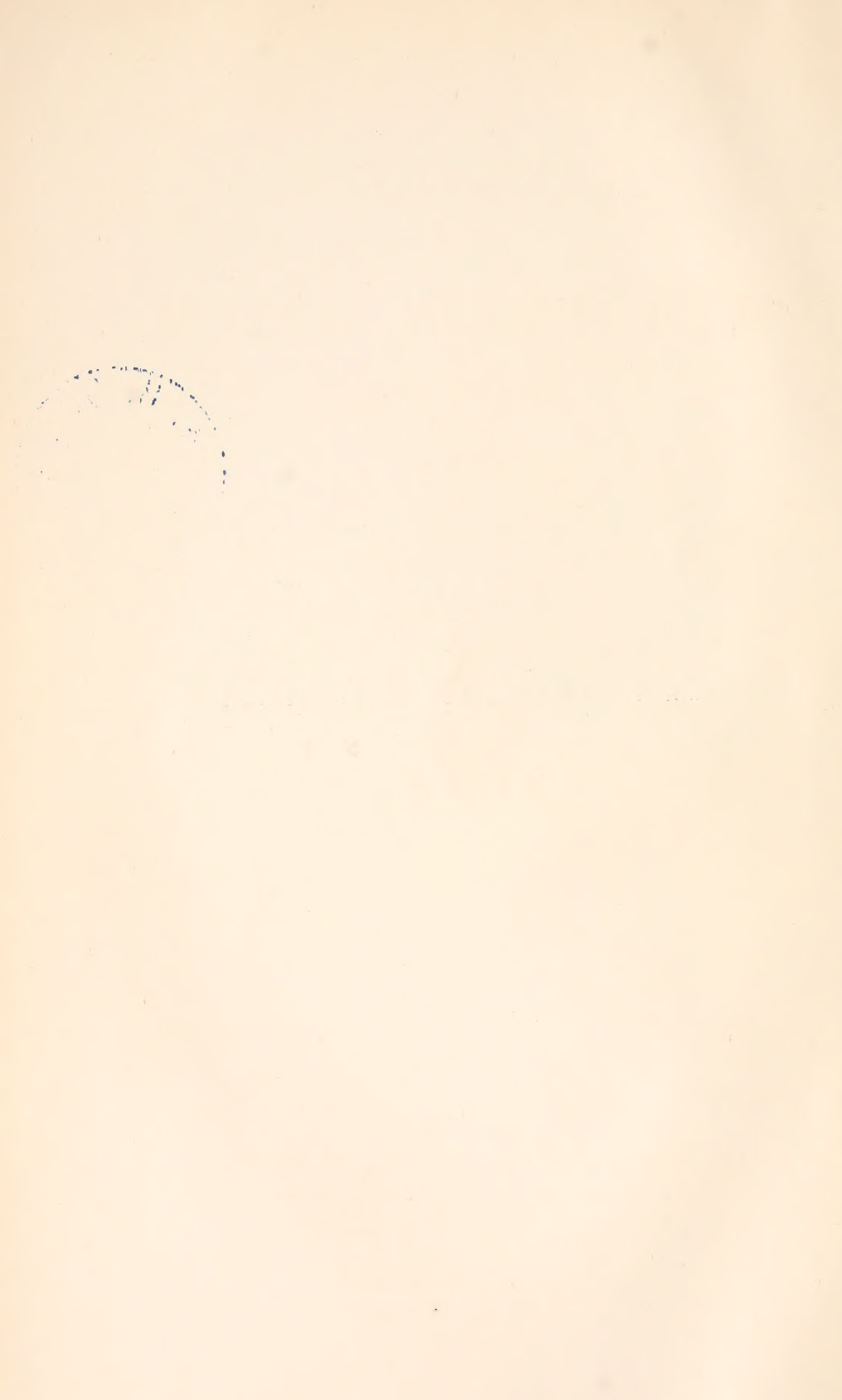




ANNALS
OF THE
SOUTH AFRICAN MUSEUM.

VOLUME I.



ANNALS
OF THE
SOUTH AFRICAN MUSEUM.

VOLUME I



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TRUSTEES OF THE SOUTH AFRICAN MUSEUM.

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INTRODUCTION.

WHEN the South African Museum was reorganised on a wider basis in the year 1897, and specialists were placed in charge of its different departments, the Trustees felt that one of the best means of increasing the scientific value of the Institution would be to issue a serial publication containing the results of the original work of the staff.

It was subsequently decided that this work should take the form of ANNALS OF THE SOUTH AFRICAN MUSEUM, and be issued in parts at irregular intervals as material became available.

The first volume, now completed, consists of three parts, the first of which was issued in the year 1898, the second and third in 1899.

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ERRATA.

P. 29, line 3 from below, for $3\frac{2}{3}$ read $4\frac{1}{2}$.

P. 31, in paragraph *a*⁶, for 2-4. Caudal read 2nd to 4th caudal.

P. 138, line 18 from above, for south-west read south.

P. 156, line 19 from below, for eastern read western, and for westwards read eastwards.

P. 353, line 19, for *M. pandora* into *M. daphne* read *M. pandora* into *M. pyrene*.

In Plates I.-IV. the figures have not been drawn to exactly the same scale as the accompanying centimetre measures, which are thus rendered useless for ascertaining the dimensions. These figures were originally intended for reproduction by photography, and were lithographed by mistake.

ANNALS

OF THE

SOUTH AFRICAN MUSEUM.

I.—*Descriptions of New South African Scorpions in the Collection of the South African Museum.*—By W. F. PURCELL, Ph.D.,
First Assistant.

(Plates I.–IV.)

THE species of the South African genus *Opisthophthalmus* have recently been thoroughly revised, and nearly all of them re-described by K. Kraepelin ('Revision der Skorpione,' ii. Theil, Hamburg, 1894), and Pocock has subsequently given us a synopsis of the species contained in the British Museum, with remarks on their localities and descriptions of some new forms (Ann. Mag. N. H. (6) v. 17, 1896). The collection of the South African Museum contains no less than twenty-two species of *Opisthophthalmus*, of which eleven are new to science, and are described in the present paper, together with one new species of *Parabuthus*.

The figures in the plates are reproductions from photographs kindly taken for me by my friend Mr. R. M. Lightfoot, of the South African Museum. The measurements may easily be ascertained from the centimetre scale photographed with each specimen.

GEN. OPISTHOPHTHALMUS C. L. Koch.

OPISTHOPHTHALMUS KARROOENSIS, n. sp.

Plate I., fig. 1; Plate II., fig. 2.

*Female (recently killed, in alcohol).**

Colour reddish brown to olive-brown; the hands, interocular area and vesicle pale-yellow or reddish yellow; cauda and ventral surface

* In the genus *Opisthophthalmus* the sex of either young or adult specimens may be easily ascertained from the structure of the genital operculum. In

of abdomen pale olive-brown to brownish yellow ; carapace along the borders of the interocular area darkened, with dark olive-green or almost black granules ; the larger granules and the crests of the palps also nearly black ; anterior face of humerus blackened ; fingers reddish brown to dark olive-green ; legs pale-yellow.

Carapace depressed, somewhat longer than broad, very broad in front, as long as the first and second caudal segment and half the third ; anterior margin truncated or widely sinuate, rugose and crenulated, not emarginate in the middle ; median groove widened in front of the eye-tubercle and again anteriorly, but not forked, terminated by a small concave lobe projecting from the middle of the anterior edge of carapace, the widened portion of the groove sometimes minutely granular ; sides of carapace coarsely granular, especially along the borders of the interocular area, finely granular at the posterior angles ; interocular area smooth and polished, finely punctate ; median eyes one-fourth of the length of carapace from the posterior margin.

Terga punctate, smooth and shining or very minutely granular in the anterior part of each segment, finely granular at the sides ; last segment coarsely granular at the sides ; segments 2-6 or 3-6 with a median longitudinal keel.

Sterna smooth and polished, finely punctate ; the last segment without keels, weakly granular posteriorly, sometimes nearly smooth with only a very few mesial granules.

Cauda sparsely granular above in the anterior segments ; the upper crests granular, the terminal tooth in segments 2-4 enlarged ; upper lateral keels granular, terminating posteriorly in middle of fifth segment ; infero-lateral and median keels granular, weak or obsolete in segments 1 and 2, distinct in segments 3-5, the median keels quite and the infero-lateral ones nearly obsolete in first segment ; lateral and ventral surfaces of cauda granular, densely so on the lower side of first two segments ; cauda shorter than the trunk ; vesicle large, longer and usually considerably broader than fifth caudal segment, with a few small granules at the base below.

Palps.—All the crests of the humerus coarsely granular ; its upper and lower surfaces, except quite distally, coarsely and somewhat thickly granular ; anterior surface with a few small and some very large granules, its upper and lower edges defined by strong crests.

the male the operculum is completely divided into two separate chitinous plates by a longitudinal cleft, and, in the adult, a pair of chitinous stylets, attached to the middle of the operculum, become visible on lifting the plates from behind. In the female the right and left halves of the operculum are soldered together along the median line, and there are no stylets.

Brachium with its granular superior surface well defined by two coarsely granular crests; the posterior surface elevated crest-like along the middle with rows of coarse granules; the anterior surface more finely granular, the basal tubercle strong. Hands moderate, depressed and moderately convex above, the length of hand-back equalling the breadth of hand, the finger-keel strong and nearly smooth; inner part of upper surface of hand nearly smooth, covered with a network of punctate anastomosing ridges, which are just perceptibly raised above the surface level, these ridges often replaced by low granules near the anterior (inner) and the distal borders and along the finger-keel, the two secondary keels obsolete but their position indicated by dark lines; inner edge of hand coarsely granular; outer part of upper surface of hand coarsely granular, the granules often forming a crest in the middle.

Legs.—Femora minutely granular, with a row of coarser granules on their upper and lower edges excepting on the upper edge of the first pair; tarsi of the last two pairs of legs with 2-3 external and 5-6 internal spines below, in addition to the 4 external and 5 internal spines on the lobes; superior process much shorter than the lateral lobes.

Operculum subcordate, somewhat broader than long, emarginate behind but not cleft longitudinally.

Pectines extending beyond the apex of fourth coxæ, with 20-21 teeth; scape rounded at the base behind and free of teeth for about one-fourth of its length.

Measurements in Millimetres of largest female.—Total length 110; greatest length of carapace 16; * width of carapace 15·8; distance of eyes from anterior margin 11; width of hand $11\frac{1}{2}$; length of hand-back $11\frac{1}{2}$, of movable finger 16, of tail 55; width of first caudal segment $5\frac{1}{2}$, of fifth caudal segment 4, of vesicle $4\frac{1}{2}$.

Male (recently killed, in alcohol).

The adult males show the following differential characters:—

Colour.—Abdomen darker above.

Carapace only slightly longer than the first and second caudal segments; its interocular area with a few minute granules at the anterior lateral angles and in the depression in front of the eye-tubercle.

Terga very densely, finely and evenly granular throughout, coarsely granular only at the sides of the last segment.

* The carapace is broader in proportion to the length in this specimen than is usually the case.

Sterna.—Segment 1 nearly smooth, or granular along the hind margin; segments 2–5 finely and densely granular throughout.

Cauda much more densely granular on the ventral surface in the first and second segments.

Palps.—All the segments longer; humerus less granular below; hands pilose, very long and narrow, the length of hand-back much exceeding the breadth of hand; the inner part of upper surface of hand flat, smooth or minutely granular, especially on the sites of the (deficient) secondary keels, the network of punctures present but not raised; inner edge of hand strongly denticulate.

Operculum transversely oval, much broader than long, completely cleft longitudinally.

Pectines reaching considerably beyond middle of trochanters of fourth pair of legs, with 25–29 teeth; scape rectangular at base behind and therefore toothed along its whole length.

Measurements in Millimetres.—Total length 106; greatest length of carapace 15; width of carapace $14\frac{1}{2}$; distance of eyes from anterior median edge 11; width of hand $7\frac{1}{2}$; length of hand-back 11, of movable finger $21\frac{1}{2}$, of tail 56; width of first caudal segment $5\frac{1}{2}$, of fifth caudal segment 4, of vesicle 5.

Young (in alcohol).

The upper surface of the hand is often covered with a network of dark pigment, corresponding with the anastomosing ridges; the humerus and brachium are almost black.

In the nearly adult female the hand is relatively smaller, but proportioned as in the adult, while in the younger individuals the length of the hand-back considerably exceeds the breadth of hand.

In the nearly adult male the hand is of the same length as in the female of the same age, but the breadth of the hand is considerably less than the length of the hand-back (in millim.:— $7:8\frac{1}{2}$); the upper surface is provided with a raised network as in the female, but the ridges show a greater tendency to form granules; the terga are more or less minutely granular; only the last segment of the sterna is granular posteriorly; the carapace is as long as the first and second caudal segment and half the third.

In the younger individuals of this species the sex is distinguishable only by means of the operculum and the pectines. The latter always possess the same shape and the same number of teeth as are found in the adult of the corresponding sex, namely, 20–21 in the female and 24–30 in the male. The granulation on the posterior part of the last sternite is also always present, though sometimes consisting of only a few weak granules.

Locality.—All the specimens described above, namely, 5 females, 3 males, and 30 young of all ages, were taken by me at the village of Prince Albert, Cape Colony.

Further localities are :—

Laingsburg (Buffels River), Prince Albert Div. : 1 adult female and 16 young of both sexes, agreeing with those from Prince Albert in every respect.

Beaufort West: 1 adult female (*Rev. G. Fisk*), 4 adult males and a large number of young (collected by myself). These male specimens are smaller, the largest being only 99 millim. long; the granulation of the sterna is either as in the male of the type or the anterior segments may be rugose in the middle and granular only at the sides; the widened part of the median groove in front of the eye-tubercle is often smooth. In all other respects these specimens resemble the type.

Victoria West: 1 male (*R. M. Lightfoot*), resembling those from Beaufort West in size, &c.; the anterior sternites of the abdomen are rugose in the middle and granular at the sides.

The area occupied by this species includes the driest part of the Great Karroo, known as the Gouph. West of the Buffels River it is replaced by *O. austerus* (at Matjesfontein and Touws River), while northwards it extends to Victoria West and probably much further. The scorpion lives in shallow excavations under stones on the tops and sides of small hills, but does not seem to make deep burrows in the earth as most of the species of the genus do.* In the structure of the palps in both sexes this species closely resembles *O. pallidipes* and *O. peringueyi*.

OPISTHOPHTHALMUS GIGAS, n. sp.

Type: Female (in alcohol).

Colour reddish brown; the interocular area, legs, vesicle, and under side of abdomen reddish yellow (probably pale-yellow in fresh specimens); hands yellowish brown above at the inner basal part; the granules on the sides of the carapace and those on the crests of the palps dark olive-green, nearly black; fingers and distal part of finger-keel nearly black; mandibles reddish, brown, not blackened.

This specimen resembles the female of *O. karrooensis* so closely that I need only point out the differential characters as follows :—

* Mr. Max Schlechter informs me that *O. pallidipes*, which he found in considerable numbers in the Divisions of Clanwilliam and Calvinia, also lives simply under stones without constructing deep burrows in the earth.

Carapace distinctly emarginate in the middle of the truncated anterior edge; the granulation of the sides very much coarser.

Terga smooth, finely granular at the sides; last segment coarsely granular, except along the elevated median line.

Sterna perfectly smooth and polished.

Cauda.—In the first two segments the ventral surface and the infero-lateral and median keels are perfectly smooth, and the median keels are not separated by a groove; cauda longer than the (much contracted) abdomen; vesicle not longer than the fifth caudal segment.

Palps.—Humerus very coarsely granular on the posterior part of upper surface, nearly smooth on the anterior part; anterior and inferior surfaces with a few small and some large granules; the superior keel of brachium smooth along the top but undulate at the sides, much stronger than the uppermost keel of the posterior side, the sloping surface between these keels forming a part of the rounded posterior surface rather than a distinct upper surface; hands denticulate on the inner edge.

Tarsi of third and fourth pair of legs with 3 external and 6 internal spines below.

Operculum subcordate, scarcely broader than long, emarginate posteriorly but not cleft longitudinally.

Pectines not extending beyond apex of last pair of coxæ, furnished with 24 teeth.

Measurements in Millimetres.—Total length 135; greatest length of carapace 22; width of carapace $20\frac{1}{2}$; distance of eyes from anterior median edge $15\frac{1}{2}$; width of hand 14; length of hand-back $13\frac{1}{2}$, of movable finger $21\frac{1}{2}$, of tail 77; width of first caudal segment $7\frac{1}{2}$, of fifth caudal segment $4\frac{3}{4}$, of vesicle $6\frac{1}{2}$.

Male (dry).

Two specimens, which are undoubtedly adult males of this species, differ from the female in the following characters:—

Colour of fingers reddish brown or blackish; finger-keel not blackened; cauda yellowish or yellowish brown.

Carapace about as long as the first and second caudal segment and one-third or one-fourth of the third.

Terga finely granular on seg. 1-6.

Sterna apparently smooth (to the naked eye) but provided with a number of exceedingly minute scattered granules, such as are occasionally found in the male of *O. pallidipes*.

Cauda with a few minute scattered granules on ventral surface of

first and second segments, similar to those occurring on the sterna ; the groove between the keels more marked in one specimen.

Palps.—All the segments longer ; hands very long and narrow, the length of the hand-back much exceeding the breadth of hand ; the inner part of the upper surface of hand smooth.

Pectines not reaching beyond middle of the trochanter of fourth pair of legs, with 24 teeth (as in the female!).

In addition to the differences mentioned for the females, the male of this species differs from that of *O. karrooensis* in the upper surface of the hand being moderately convex, especially near the inner edge, instead of flat ; further, the scape of the pectines is not rectangular at the posterior basal angle but rounded off as in the female of *karrooensis*.

Measurements in Millimetres.—Total length 130 ; greatest length of carapace 22 ; width of carapace $20\frac{1}{2}$; distance of eyes from anterior median edge 15 ; width of hand 10 ; length of hand-back 15, of movable finger $32\frac{1}{2}$, of tail 80 ; width of first caudal segment 7, of fifth caudal segment 5, of vesicle 7.

Locality.—One of the male specimens is labelled " Nisbet Bath [Warmbad], Great Namaqualand " (*W. Palgrave*). The female specimen, which bears no label, was captured with 22 colourless young, to which it had given birth ; one of the young ones is in the animal's mouth, partially devoured.

OPISTHOPHTHALMUS FLAVESCENS, n. sp.

Plate II., fig. 3.

Female (dry).

Colour nearly uniformly yellow, the mandibles and the tips of the maxillary processes black.

Carapace large, as broad as long, its length equalling that of the first and second caudal segment together with two-thirds of the third ; interocular area smooth and shiny, finely punctate, strongly convex on each side of the median groove ; anterior edge not emarginate in the middle, crenulated ; sides of the carapace somewhat sparsely but not very coarsely granular, the interocular area not bordered laterally by a strip of coarser granules ; median groove smooth, large, not forked anteriorly, widened in front of the median eyes to a large lozenge-shaped hollow, and again, anteriorly, to a narrower but deeper trough-like excavation ; median eyes one-third of the length of the carapace from the posterior border.

Terga.—Segments 1-6 smooth and shiny, finely punctate, minutely granular only at the postero-lateral angles ; segments

2-6 with a smooth longitudinal keel; segment 7 with a low, smooth, median elevation in front, minutely granular on each side of this, coarsely granular laterally and on the pair of posterior elevations; behind the median elevation of seventh segment is a smooth transverse depression.

Sterna.—All the segments smooth and polished, finely punctate; the last not carinate.

Cauda rather weak; its upper surface smooth and polished; the upper crests granular, obsolete in the posterior half of the fifth segment, the terminal tooth enlarged and spiniform in segments 2-4; upper lateral crests granular, weak on segment 5, and present only on the anterior half of the segment; inferior lateral crests weak in the anterior segments, smooth in the first 3 segments, weakly granular in segment 4, serrated in segment 5; infero-median crests obsolete on segments 1-3, weakly granular on segment 4, denticulate on segment 5; ventral surface of cauda smooth, polished and finely punctate in segments 1-3, nearly smooth and hollowed out between the keels in segment 4, with a row of coarse granules on each side of the median crest in segment 5; lateral surface of cauda sparsely and finely granular; vesicle smooth.

Palps.—Crests of the humerus coarsely granular, the infero-posterior crest developed only in the proximal half; upper surface of humerus coarsely granular; anterior surface flat, large, nearly as broad as the upper surface, with well-marked upper and lower crests and coarsely but sparsely granular in the proximal half; lower surface of humerus with a few weak granules; upper crest of brachium composed of a row of coarse granules, posterior surface of brachium with a number of low, rounded granules; hands moderate, convex above, finely punctate and shiny, the upper surface covered with low, rounded, anastomosing tubercles; finger-keel moderate, nearly smooth; the inner part of upper surface of hand with a single, low, broad, longitudinal elevation extending from the base to the finger, and representing the secondary keels; outer part of upper surface with a secondary keel, composed of a row of enlarged granules; width of hand scarcely exceeding the length of hand-back; inner edge of hand denticulate.

Legs.—Anterior surface of femora nearly smooth, with a few minute granules, lower edge of femora granular; tarsi very bristly, the terminal tarsi of the last two pairs of legs with 1-2 external and 4 internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes; anterior claw of each foot very long, much longer than the posterior claw; superior terminal process of tarsi very large, longer than the lateral lobes, provided with 6-8

long bristles and appearing, when viewed from above, twice as thick as either of the claws.

Operculum cordate, somewhat longer than broad, emarginate behind but not cleft longitudinally.

Pectines with 20–21 teeth; scape rounded at the base behind and free of teeth for about two-sevenths of its length.

Measurements in Millimetres.—Total length 100; greatest length of carapace 16; width of carapace 16; distance of eyes from anterior median border 10; width of hand 10; length of hand-back 10, of movable finger $16\frac{1}{2}$, of tail 51; width of first caudal segment $5\frac{1}{2}$, of fifth caudal segment 4.

A single specimen bearing the label “Walfisch Bay,” Damaraland (*Carrington Wilmer*).

The affinities of this species are not apparent to me. The structure of the tarsi is very peculiar.

OPISTHOPHTHALMUS FOSSOR, n. sp.

Plate III., fig. 4, 4a.

Female (recently killed, in alcohol).

Colour of carapace, abdomen, palps, and legs dark reddish brown; the interocular area of carapace, the vesicle and the inner basal portion of hand much lighter, ochraceous or reddish yellow; carapace on each side of the interocular area black; a considerable portion of the humerus and brachium, especially on the crests, black; the fingers, the keels of hands and tail and the mandibles also black.

Carapace longer than wide, as long as the first and second caudal segment and one-third to one-fourth of the third; its interocular area rugose or weakly granular in front, nearly smooth behind, rarely nearly smooth throughout; sides of the carapace very coarsely granular right up to the edge, the granulation especially coarse along the borders of the interocular area, more finely granular at the posterior angles; median eyes one-third of the length of carapace from the posterior edge; anterior fork of median groove usually quite obsolete, occasionally partially developed, never extending, however, as far as the anterior edge of carapace.

Terga densely granular throughout, the granules coarser in the posterior part of each segment; the last segment coarsely granular at the sides and behind, finely granular but not at all or scarcely elevated mesially in front, with a pair of low elevations behind; segments 3–6 with traces of the median keel, which often takes the form of a tubercle.

Sterna.—First four segments smooth and polished, finely punctate; last segment smooth (rarely with a few of the minutest granules) in the middle, coarsely or weakly granular or almost smooth at the sides, with a more or less distinct keel on each side and a wide, usually granular, depression between each keel and the lateral margin.

Cauda moderate; the granulation of the upper surface for the most part confined to the sides, strong in the anterior and sparse in the posterior segments, the fifth segment smooth above; upper crests granular, weak in the anterior segments, the terminal tooth not enlarged; upper lateral crests well developed, granular, absent from the posterior half of the fifth segment; infero-lateral and median crests strong in all the segments, nearly smooth, sub-crenulate, or weakly granular in segments 1–2, crenulate or granular in segments 3–4, serrated in segment 5; sides and ventral surface moderately granular between the crests; vesicle smooth or with a few minute granules at the base below.

Palps.—Crests of the humerus and its upper, anterior and lower surfaces coarsely granular, the upper anterior edge rounded and coarsely granular; upper crest of brachium smooth or nearly so; anterior surface of brachium rather finely and sparsely granular, posterior surface with interrupted and partly granulated longitudinal crests; hands broad, robust, cordate at base, strongly convex above; inner part of the upper surface of hand thickly covered with low, rounded, anastomosing granules, the secondary keels black pigmented, weak, stronger distally; outer part of upper surface of hand with more conical granules and a stronger secondary keel; finger-keel strong and nearly smooth; inner edge of hand bluntly granular.

Legs.—Anterior surface of posterior femora sparsely and minutely granular, lower edge of femora more closely granular; tarsi of the third and fourth pairs of legs with 2 external and 4 (rarely 5) internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes; these lobes scarcely or not much longer than the well-developed superior process.

Operculum cordate-triangular, emarginate posteriorly but not cleft longitudinally, somewhat broader than long.

Pectines with 12–14 teeth, the posterior basal angle obtuse, scape free of teeth at base for about one-fifth of its length.

Measurements in Millimetres.—Total length 89; greatest length of carapace $13\frac{1}{2}$; width of carapace $12\frac{1}{2}$; distance of eyes from anterior median edge 8; width of hand $11\frac{1}{2}$; length of hand-back 7, of movable finger 13, of tail 46; width of first caudal segment 6, of fifth caudal segment 4.

Male (recently killed, in alcohol).

Differential characters:—

Carapace as long as the first two caudal segments together.

Tail robust.

Sterna.—First four segments minutely granular at the lateral borders; fifth segment granular throughout, usually with coarser granulation at the sides, in the middle sometimes rugose or even nearly smooth, keels as in the female.

Palps.—Upper anterior crest of humerus distinct, composed of a row of coarse granules; hands very pilose, much slenderer than in the female, the fingers very long; inner part of the upper surface of hand nearly flat, often concave distally, covered with low coarse granules, which may, however, almost disappear, except along the inner border; the two secondary keels always very distinct, composed of rows of coarse black granules; inner edge of hands denticulate.

Operculum transversely oval or rhomboidal, much broader than long, completely cleft longitudinally.

Pectines with 17–20 teeth, rectangular at the base behind and therefore toothed along the whole length of scape.

Measurements in Millimetres.—Total length 93; greatest length of carapace 12; width of carapace $11\frac{1}{2}$; distance of eyes from anterior median edge 8; width of hand 8; length of hand-back $6\frac{1}{2}$, of movable finger 17, of tail 53; width of first caudal segment 6, of fifth caudal segment $4\frac{1}{2}$.

Locality.—Two females and two males from Schlanghoek, Worcester Div. (*R. Francke*).

Four females and one male from the Winterhoek Mountains, Tulbagh Div. (*Dr. Kolbe*, *F. Treleaven*, *R. M. Lightfoot*, and myself).

Three females and four males labelled “Witzenberg Mountains,” Tulbagh Div. (*T. H. Kleinschmidt*); characterised by the stronger crenulation of the inferior keels in the first caudal segment, and by the smoothness of the inner part of the upper surface of the hand in the male.

This scorpion constructs deep burrows in the earth, but it also lives under stones. It is very closely related to *O. macer*, *chaperti*, and probably also to *intermedius*. The coloration is almost exactly that of *O. macer*, Thor., although the humerus and brachium in the latter are not so darkly coloured; further, in the structure of the cauda with its well-developed, blackened, inferior keels, in the proportions and structure of the hands in both sexes, in the granulation

of the terga and sterna and in the armature of the tarsi these two species show considerable affinity to one another. The main difference between them lies in the granulation of the carapace, which is never provided with very coarse granules in *O. macer*; in the latter, also, the upper surface of the hand in the male is distinctly convex, in the distal part not concave, and furnished with stronger secondary keels. In *O. macer* the last segment of the sterna is smooth, or granular only at the sides.

Of *O. chaperi* Simon, only the male is known, and is referred by Kraepelin to *O. pilosus* (the male of *O. capensis*), but it is a very distinct species. The legs in *chaperi* are yellow and the humerus and brachium are blacker than in *fossor*, but for the rest the coloration is identical. The hands are formed as in those specimens of *fossor* which have the inner part of the upper surface nearly smooth, and differ only in the absence of the secondary keels. The tail in *chaperi* differs in having the inferior median keels practically obsolete in segments 1 and 2, the under surfaces of which are densely granular. The 2-4 segments of the sterna are finely granular and rugose and the last segment is densely granular with (in my specimen) traces of lateral keels. There is no trace of a fork of the median groove in front. In all other respects the two species are alike.

O. intermedius, Kraepelin, which I have not seen, evidently also belongs to this group. It differs from *fossor* by the legs being coloured yellow and by not possessing secondary keels on the inner part of the upper surface of hands, but appears to resemble it in every other respect.

OPISTHOPHTHALMUS SCHLECHTERI, n. sp.

Male (recently killed, in alcohol).

Colour pale-yellow; the vicinity of the eyes, a narrow strip on each side of the interocular area of carapace, five lines on the upper surface of hands, the mandibles, the anterior region of the segments of the terga and the under surface of the five caudal segments infusate, the infusate part with 3-1 longitudinal pale lines in the anterior caudal segments.

Carapace much longer than broad; its interocular area shiny and nearly smooth, convex in the middle on each side of the median groove; anterior edge not emarginate in the middle; sides of the carapace finely granulated, the granules along the borders of the interocular area somewhat coarser than on the rest of the surface; median groove bordered by a row of granules on each side, distinctly

forked in front; median eyes one-third of the length of the carapace from the posterior border.

Terga smooth, except at the sides, where they are finely granular, seventh segment finely granular, coarsely so at the sides.

Sterna.—All the segments smooth and polished, the last not carinate.

Cauda moderate; its upper surface granular on the first, nearly or quite smooth on the following segments; the upper crests granular, the terminal tooth enlarged in segments 2-4; upper lateral crests granular, obsolete in the posterior half of segment 5; infero-lateral crests smooth and practically obsolete in segments 1-3, weakly granular in segment 4, serrated in segment 5; median crests quite obsolete in segments 1-4, serrated in segment 5; under surface of cauda quite smooth and polished in segments 1-4, with a few scattered granules in segment 5; sides of the cauda with a few scattered granules in the anterior segments.

Palps.—Crests of the humerus and its upper and anterior surfaces coarsely granular; under surface of humerus nearly smooth; upper crest of brachium coarsely granular, the posterior surface of brachium granular along the middle; hands moderate, convex above, the inner part of the upper surface covered with low, weak granules; the secondary keels obsolete, their position indicated only by two black lines; outer part of the upper surface of hand with conical granules and a distinct, granulated, infusate, secondary keel along the middle; finger-keel very weak, crenulated; inner edge of hand coarsely granular; width of hand less than the length of hand-back.

Legs.—Lower edge of the anterior femora and the anterior surface of the posterior ones granular; tarsi of the fourth pair of legs with no external and 4-5 internal spines below, in addition to the 3 external and 5 (or 4) internal spines on the terminal lobes; the superior process much shorter than the lateral lobes.

Operculum transversely oval, much broader than long, completely cleft longitudinally.

Pectines with 20-21 teeth; scape free of teeth at the base for about one-fourth of its length.

Measurements in Millimetres.—Total length 63; greatest length of carapace $10\frac{1}{2}$; width of carapace $9\frac{1}{2}$; distance of eyes from anterior median edge 7; width of hand 6; length of hand-back 7, of movable finger $7\frac{1}{2}$, of tail 34.

Female, young (in alcohol).

Operculum undivided, wider than long. *Pectines* with 14 teeth, the scape free of teeth at the base for more than one-third of its length. Rest of the characters as in the male.

A male and a young female specimen, captured by Mr. Max Schlechter in Little Bushmanland along the road leading from Steinkopf to Ramond's Drift on the Orange River, Namaqualand. They live in burrows in sandy ground. Mr. Schlechter found *O. wahlbergi* living in the same locality.

In the male specimen described above the carapace is as long as the first and second caudal segment and one-half of the third, hence possibly not quite full grown. It is so well characterised, however, especially by the smoothness and the absence of crests on the under surface of the first four caudal segments, that I have not hesitated to describe it.

OPISTHOPHTHALMUS GRANICAUDA, n. sp.

Male (recently killed, in alcohol).

Colour of carapace and cauda brownish yellow to olive-brown; legs and vesicle pale-ochraceous; arms ochraceous to ochre-brown; abdomen brown or olivaceous with the hind edge of the segments brown; the crests of the palps, the fingers, the mandibles, and the crests above the median and lateral eyes black or dark olive-green.

Carapace longer than wide, as long as the first and second caudal segment; its interocular area coarsely or weakly granular in front, nearly smooth on the convexities behind; sides of the carapace granular, coarsely so along the borders of the interocular area; median eyes more than a quarter of the length of carapace from posterior edge; median groove distinctly forked in front.

Terga densely and finely granular throughout, the last segment with coarser granulation at the sides, the third to sixth segment with a weak, granular, median keel, the seventh with a low, finely granular, median elevation and two low, coarsely granular, posterior elevations.

Sterna.—Segments 1-4 finely granular at the lateral borders, their surface finely rugose or the anterior ones smooth; fifth segment keelless, very densely and finely granular or rugoso-granular throughout, as is also the ventral surface of the first four caudal segments.

Cauda moderate; the granulation of the upper surface for the most part confined to the sides, strong in the anterior, sparse in the posterior segments, the fifth segment smooth above; upper crests granular, the terminal tooth usually (but not always) enlarged and spiniform on segments 2-4; upper lateral crests well developed, granular, on segment 5 weak, and present only in the anterior half; infero-lateral keels practically obsolete in segments 1-4, least so in segment 4, where a row of slightly enlarged granules often indicates

their position ; infero-median keels quite obsolete in segments 1-4 ; the position of the two ventral pairs of keels on the first four segments is usually indicated by black lines or spots, which extend on to the posterior sternite ; the whole ventral surface of the fourth caudal segment is densely covered with fine rounded granules, slightly larger than those on the anterior segments ; fifth caudal segment three times as long as broad, sparsely granular at the sides and below, the median keel weaker than the infero-lateral ones ; vesicle smooth or minutely granular at the base below, sometimes with longitudinal infusate bands.

Palps.—All the crests of the humerus together with its upper, anterior, and lower surfaces coarsely granular ; upper crest of brachium coarsely granular, the posterior surface sparsely so ; hands hairy, slightly convex and coarsely granular above, the granules conical and connected by a network of black pigment ; finger-keel strong and granular, in its distal portion sometimes only crenulated ; the secondary keels weak, granular, indicated by black lines ; inner edge of hand denticulate ; width of hand exceeding length of hand-back.

Legs with the lower edge of femora coarsely granular, the anterior surface of posterior femora finely granular ; tarsi of fourth pair of legs with no external and 4-5 internal spines below, those of the third pair of legs with 1-2 external and 4-5 internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes ; the superior process much shorter than the lateral lobes.

Operculum transversely oval, much broader than long, completely cleft longitudinally.

Pectines with 11-15 teeth ; scape rounded at the base behind and free of teeth for one-third of its length.

Measurements in Millimetres.—Total length 82 ; greatest length of carapace 12 ; width of carapace 11 ; distance of eyes from anterior median edge 8 ; width of hand 8 ; length of hand-back $6\frac{1}{2}$, of movable finger 10, of tail 49 ; width of first caudal segment $5\frac{1}{2}$, of fifth caudal segment 4.

Female (recently killed, in alcohol).

Darker.

Carapace as long as the first and second caudal segment and one-third of the third.

Terga.—Segments 1-6 smooth in the middle, finely granular at the sides ; segments 2-6 with smooth longitudinal keels.

Sterna.—All the segments smooth and polished.

Cauda slenderer, with the ventral surface of segment 1 smooth, of

segment 2 slightly rugose, of segment 3 weakly but thickly granular, and of segment 4 finely and densely granular throughout.

Hands.—Inner part of upper surface covered with low, rounded granules, showing a tendency to anastomose; finger-keel weak, secondary keels nearly obsolete.

Operculum cordate, somewhat broader than long, emarginate behind but not cleft longitudinally.

Pectines with 11 teeth, the basal intermediate lamella elongate as in the female of *O. granifrons*, the scape being without teeth at base for nearly one-half of its length.

Measurements in Millimetres.—Total length 75; greatest length of carapace 12; width of carapace 11; distance of eyes from anterior median edge 8; width of hand 9; length of hand-back $6\frac{1}{2}$, of movable finger $9\frac{1}{2}$, of tail 40; width of first caudal segment $4\frac{1}{2}$, of fifth caudal segment 3.

Locality.—11 males and 1 female collected at Port Nolloth, Namaqualand.

This species is closely allied to *O. granifrons*, Pocock; but in the latter the fourth caudal segment has distinct, granular, median and infero-lateral keels below, with only a few coarse and fine granules between the keels. Further in *granifrons* the under side of the humerus is nearly smooth, the posterior sternite is weakly granular in the female, and that of the male is much more coarsely granular than in *granicauda*. In *granifrons* the number of pectinal teeth varies from 14–22 in the male and from 10–18 in the female.

OPISTHOPHTHALMUS ATER, n. sp.

Male (recently killed, in alcohol).

Colour of whole animal purplish black; the teeth of the pectines, the median groove of carapace and the soft skin joining the segments of the limbs white; the under surface of the terminal tarsi, the basal part of the claws and the spiracles pallid; the fingers, the base of aculeus and the convexities of the interocular area of carapace dark reddish.

Carapace as long as the first and second caudal segment and one-third of the third; its interocular area coarsely granular in the anterior part and in front of the median eye-tubercle, but smooth on the convexities; sides of the carapace coarsely granular, especially along the borders of the interocular area; median eyes a little less than a third of the length of carapace from the posterior edge; median groove distinctly forked in front, white.

Terga as in the male of *O. granicauda*, but the three elevations of the seventh segment are very low.

Sterna smooth and polished, finely punctured, the posterior segment somewhat roughened at the sides; spiracles with a straight anterior and arcuate posterior edge, the rather wide space between these edges occupied by a pale yellowish plate.

Cauda moderate; its upper surface coarsely granular in segments 1-4, nearly smooth in segment 5, the median groove finely granular in the anterior, smooth in the posterior segments; upper crests granular, weak in segment 1, the terminal tooth enlarged in the fourth segment; upper lateral crests weakly granular; infero-lateral and median crests completely obsolete in segments 1-4, serrated in segment 5; sides of cauda weakly granular, more strongly so in the first and fifth segments; ventral surface of first three caudal segments smooth, polished, and finely punctate, that of fourth segment somewhat roughened with pits and minute granules; fifth segment coarsely granular below; vesicle minutely granular on the basal half of lower surface.

Palps.—All the crests of the humerus and its upper and anterior surfaces coarsely granular, the lower surface nearly smooth; upper crest of brachium crenulated, posterior surface coarsely granular; hands with long hairs, moderately convex above, the upper surface covered with strong isolated granules; finger-keel weak, granular or crenulated; inner part of upper surface of hand with no trace of the secondary keels, the outer part of the upper surface with traces of a secondary keel; inner edge of hand denticulate; middle of hand slightly exceeding the length of hand-back.

Legs.—Lower edge of femora coarsely granular, anterior surface of posterior femora finely and sparsely granular; tarsi of fourth pair of legs with 1 external and 3-4 internal spines below, those of the third pair with 2 external and 3-4 internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes; superior process much shorter than the lateral lobes.

Operculum much broader than long, completely cleft longitudinally.

Pectines with 13 teeth, the scape rounded at the base behind and free of teeth for one-fifth of its length.

Measurements in Millimetres.—Total length 54; greatest length of carapace $8\frac{1}{2}$; width of carapace ? (specimen damaged); distance of eyes from anterior median edge 6; width of hand $5\frac{1}{2}$; length of hand-back 5, of movable finger $6\frac{1}{2}$, of tail 32; width of first caudal segment 4, of fifth caudal segment 3.

Locality.—A single, somewhat mutilated specimen from Steinkopf, Namaqualand.

This species is remarkable for its dark coloration and the absence of keels from, and smoothness of, the under surface of the first four caudal segments. It shows considerable affinity to *O. granicauda*. The structure of the cephalothorax resembles that of *granicauda* and *granifrons*.

OPISTHOPHTHALMUS LEIPOLDTI, n. sp.

Plate III., fig. 5.

Male (recently killed, in alcohol).

Colour of carapace and abdomen brown, the last segment yellowish; the interocular area of carapace, the palps, legs, and tail pale ochraceous; the carapace along the sides of the interocular area blackened; the crests of the palps, the fingers, and the mandibles black or blackish brown.

Carapace longer than wide, as long as the first and second caudal segment; its interocular area coarsely granular in the anterior half, nearly smooth on the convexities behind; sides of the carapace granular, coarsely so along the borders of the interocular area; length of carapace $3\frac{1}{2}$ – $3\frac{3}{4}$ times the distance of median eyes from posterior edge; median groove distinctly forked in front.

Terga as in *O. granicauda*.

Sterna.—Segments 1–3 (or 2–3) weakly granular along posterior border and in the middle, the first sometimes quite smooth; segment 4 densely granular in the middle and posteriorly, very finely so laterally; segment 5 (and the first caudal segment below) keelless, very densely and evenly covered with low, oval granules, which are somewhat less coarse but denser and more numerous than in the male of *granifrons* and *capensis*; spiracles with parallel edges.

Cauda less robust than in *granifrons*; the upper surface in segment 1 coarsely granular, in the following segments with a few scattered granules or nearly smooth; upper crests granular, the terminal tooth enlarged and spiniform in segments 2–4; upper lateral crests well developed, granular, in the fifth segment weak and present only on the anterior half; infero-lateral crests practically obsolete in segment 1, the median crests completely absent in the same segment, both these crests weakly granular in segment 2, more strongly so in segments 3 and 4, strongly granular in segment 5; sides and under surface of segments 2–5 with scattered granules, the under surface of segment 2 more densely granular between the keels; vesicle smooth; fifth caudal segment more than three times as long as broad.

Palps.—All the crests of the humerus together with its upper-

anterior, and lower surface coarsely granular; upper crest of brachium coarsely granular, the posterior surface with a few granules and some semicircular elevations round the bases of the hairs along the middle; hands pilose, slightly convex above and covered with low rounded elevations; finger-keel strong and nearly smooth; the secondary keels weak, granular, marked with black lines; inner edge of hand denticulate; width of hand equal to the length of hand-back.

Legs with lower edge of femora coarsely granular, anterior surface of posterior femora finely granular; tarsi of fourth pair of legs with no external and 5-6 internal spines below, in addition to the 3 external and 4 internal spines on the terminal lobes; tarsi of the third pair with a minute or no external and 4-5 internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes; the superior process as long as the lateral lobes.

Operculum transversely oval, much broader than long, completely cleft longitudinally.

Pectines with 13-15 teeth, scape rounded at the base behind and free of teeth for one-third of its length.

Measurements in Millimetres.—Total length 97; greatest length of carapace 14; width of carapace 12; distance of eyes from anterior median edge $9\frac{1}{2}$; width of hand $7\frac{1}{2}$; length of hand-back $7\frac{1}{2}$, of movable finger 13, of tail 56; width of first caudal segment $5\frac{1}{2}$, of fifth caudal segment 4.

Female (recently killed, in alcohol).

Differs from the male in the following characters:—

Colour.—The humerus and brachium in some specimens more or less blackened.

Carapace as long as the first and second caudal segment and half the third.

Terga.—Segments 1-6 shiny, smooth or roughened in the middle, finely granular at the sides, the granulated area increasing in the posterior segments; median keel smooth.

Sterna.—Segments 1-4 smooth and polished; segment 5 weakly and evenly granular, smooth only along the anterior border, the granules more numerous than in the female of *O. granifrons*, Pocock.

Cauda rather weak; infero-lateral crests sometimes weakly developed in segment 1; under surface of segments 1 and 2 weakly granular, like the last segment of the sterna.

Palps.—Hands broad, robust, cordate at base, strongly convex above; the inner part of the upper surface thickly covered with low rounded granules; secondary keels weak, composed of a row of

black granules, slightly larger than the others; finger-keel strong, nearly smooth, often interrupted in the proximal part.

Operculum cordate, slightly broader than long, deeply emarginate behind, but not completely cleft longitudinally.

Pectines with 8–12 teeth, scape free of teeth at base for about two-fifths of its length.

Measurements in Millimetres.—Total length 100; greatest length of carapace $14\frac{1}{2}$; width of carapace $13\frac{1}{2}$; distance of eyes from anterior median edge 10; width of hand $10\frac{1}{2}$; length of hand-back 8, of movable finger 12, of tail 49; width of first caudal segment $5\frac{1}{3}$, of fifth caudal segment $3\frac{1}{3}$.

Four adult males, 6 adult females, and 11 young of both sexes from Clanwilliam (*C. L. Leipoldt*).

This species is closely allied to *O. granifrons*, being intermediate between *granifrons* and *capensis*.

OPISTHOPHTHALMUS FUSCIPES, n. sp.

Female (recently killed, in alcohol).

Colour a deep rich reddish brown; the terga, with the exception of a band along the posterior borders, and the carapace along the lateral borders of the interocular area nearly or quite black; the mandibles, the fingers, the crests of palps and of under side of cauda and the maxillary processes of second pair of legs black; the posterior surface of legs, the under side of hands and brachia, and often also the interocular area and the inner basal portion of the upper surface of hands lighter in colour; under side of first caudal segment and of last abdominal sternite with four black lines, which are sometimes confluent and are continuations from the four black keels of the second caudal segment.

Carapace longer than wide, as long as the first and second caudal segment and half the third; the anterior edge between the eyes and the triangular area with a row of hairs, but otherwise nearly smooth and straight; the median groove deep, distinctly forked in front; interocular area coarsely granular in its anterior half, weakly granular or nearly smooth behind; sides of the carapace coarsely granular, especially along the borders of the interocular area; median eyes one-third, or slightly less than one-third, of the length of carapace from posterior border.

Terga granular and shiny, the anterior and the mesial portion in the front segments and the anterior median region in the last segments but one, very finely granular or only slightly roughened; longitudinal keel of segments 2–6 smooth throughout or finely

granular and smooth only on the tubercle ; seventh segment with a low, median, granular elevation, but scarcely showing a trace of the lateral crests.

Sterna smooth and polished, the last segment weakly granular, except in front and at the sides where it is smooth ; anterior edge of spiracles straight or nearly so, the posterior edge arched backwards, the space between the edges thus considerably wider at the middle than at the ends of the spiracle and occupied by a yellowish plate.

Cauda slender ; the upper crests granular, the terminal tooth in segments 2-4 not or but slightly enlarged (in one specimen, however, enlarged and spiniform) ; upper lateral crests granular, absent on posterior half of the fifth segment ; infero-lateral and median keels obsolete in segment 1, weakly granular in segments 2 and 3, granular in segment 4, serrated in segment 5 ; upper surface granular in segment 1, nearly smooth, with a few minute granules in segments 2-3 or 2-4, smooth in segment 5 ; intercarinal spaces more or less granular, the granulation of the basal segment resembling that of the last sternite ; vesicle sparsely granular at base below.

Palps.—All the crests of the humerus, its upper and under surfaces and the upper part of the anterior side coarsely granular ; upper crest of brachium crenulated but not composed of a row of large isolated granules, anterior lower edge coarsely granular, posterior edge smooth ; posterior surface of brachium with numerous smooth, often laterally sinuated ridges placed in rows to form irregular longitudinal crests ; hands convex above, the whole upper surface thickly covered with low, broad, rounded granules, which often anastomose in the basal half ; finger-keel strong, for the greater part smooth, showing a tendency to break up into granules only at the base ; secondary keels very weak, defined by black lines ; the hands wide, their strongly convex inner edge with blunt granules.

Legs with the lower edge of anterior femora weakly granular ; tarsi of fourth pair of legs with only 3 spines on the external terminal lobe and no external spines on the under side ; tarsi of the third and fourth pair of legs with 8-9 internal spines on the terminal lobe and the under side together, the fifth spine from the end being sometimes on the lobe, sometimes not ; tarsus of the third pair of legs with 4 spines on the external lobe and 1 external spine on the under side as well, which, however, is very small and occasionally absent ; lateral lobes and the superior median process of equal length.

Operculum cordate, broader than long, emarginate posteriorly, but not cleft longitudinally.

Pectines with 9 or 10 teeth, rarely with as many as 11 or 12 ;

scape toothless for about two-fifths of its length, the posterior basal angle about 150° .

Measurement in Millimetres.—Total length 85; greatest length of carapace 13; width of carapace 12; distance of eyes from anterior median edge $8\frac{1}{2}$; width of hand $8\frac{1}{2}$; length of hand-back 8, of movable finger $9\frac{1}{2}$, of tail 44; width of first caudal segment 5, of fifth caudal segment 4.

Male (recently killed, in alcohol).

Colour of hands lighter above; terga almost entirely black.

Carapace scarcely longer than first two caudal segments; posterior half of interocular area weakly granular or nearly as strongly granulated as the anterior half.

Terga not shiny; the first 6 segments very densely and minutely granular, with larger granules near the posterior border in the last 3 or 4 of these segments.

Sterna.—First three segments smooth, except along the posterior edge of the third and sometimes also of the second, where they are usually roughened; fourth segment finely granular and rugose, but smooth in front of the stigmata; fifth segment entirely covered with squamiform granules, as is also the lower surface of the first caudal segment.

Hands much narrower but not longer than in female, more hairy; upper surface more weakly granulated, its keels, and especially the secondary keels, more strongly expressed; the granules on the inner edge more pointed.

Operculum transversely oval, completely cleft longitudinally.

Pectines with 11–12 teeth; the scape toothless at base for nearly one-third of its length, the posterior basal angle 130° – 135° .

Measurements in Millimetres of largest male.—Total length 74; greatest length of carapace 11; width of carapace $10\frac{1}{2}$; distance of eyes from anterior median edge 7; width of hand 6; length of hand-back $5\frac{1}{2}$, of movable finger 10, of tail 41; width of first caudal segment 5; of fifth caudal segment 4.

Locality.—A number of adult males and females from near the railway station at Tulbagh Road at the foot of the Waterfall Mountains, Tulbagh Division. They construct deep burrows in the earth.

This species is very closely allied to *O. capensis*. I can find scarcely a differential character for either of these species which does not occasionally appear in the other; excepting, however, (1) the colour of the legs, the anterior surface of which is deep reddish brown and the posterior surface lighter in *fuscipes*, while in *capensis*

both surfaces are similarly coloured pale ochraceous, becoming reddish yellow in old spirit specimens; (2) the shape of the spiracles, which are very narrow with parallel edges on *capensis*, but widened with the posterior edge arched in *fuscipes*. The other main differences are :—

O. capensis (from Cape Peninsula).

Hands smoother above.

Length of hand-back in male equal to breadth of hand (sometimes less).

Interocular area weakly granular in front (sometimes coarsely so).

Pectines in male with posterior basal angle less obtuse.

Operculum cordate, as long as broad (sometimes broader than long).

Segments 2-4 of cauda with large terminal spine on upper crests.

Sterna 1-4 more coarsely granular in male.

Tarsi of fourth leg with 4 (sometimes 3) spines on external lobe.

O. fuscipes.

Hands rougher above.

Length of hand-back less than the breadth of hand.

Interocular area coarsely granular in front.

Basal angle of pectines more obtuse.

Operculum broader than long.

Upper crests without enlarged spine (sometimes terminal tooth enlarged and spiniform).

Sterna 1-4 less coarsely granular.

Tarsi of fourth leg with 3 spines on external lobe.

OPISTHOPHTHALMUS PERINGUEYI, n. sp.

Female (in alcohol).

Colour dark brownish olivaceous, nearly black, the under side lighter; legs, vesicle, interocular area of carapace and the hands reddish yellow (probably pale ochraceous in fresh specimens); fingers and mandibles greenish black; maxillary processes not darkened at the apex.

Carapace longer than wide, as long as the first and second caudal segment and one-third of the third; the interocular area smooth and polished, finely punctate, not bordered laterally by very coarse granules, but passing gradually over into the rather finely granular sides of the carapace; anterior edge of the carapace weakly granular, seen from above broadly sinuate, slightly emarginate in the middle; median eyes two-sevenths of the length of the carapace from the

posterior border; median groove enlarged in front of the median eyes, distinctly forked anteriorly, the triangular area long and nearly smooth, the T-shaped depression behind the median eyes with a few very minute granules.

Terga very minutely granular, the segments nearly smooth in the middle and furnished with a longitudinal keel; last segment coarsely granular at the sides and behind, with traces of lateral crests, finely granular on the low, broad, median elevation in front.

Sterna smooth and polished, finely punctate, the last segment without traces of keels.

Cauda moderate; the upper surface granular in segment 1, nearly smooth, with a few minute granules in segments 2-4, smooth in segment 5; upper crests granular, the terminal tooth enlarged in segments 2-4; upper lateral crests granular, absent from the posterior half of fifth segment; infero-lateral and median keels smooth in segments 1-3, granular in segment 4, serrated in segment 5; lateral surfaces of cauda smooth and polished in segments 1 and 2, sparsely and finely granular in segments 3 and 4, coarsely granular in segment 5; vesicle smooth.

Palps.—All the crests of the humerus well developed, coarsely granular, the upper, lower, and anterior surfaces also coarsely granular, the lower posterior crest reaching to near the distal end of the humerus; upper crest of brachium nearly smooth; anterior surface of brachium finely granular, the posterior surface with several smooth and granular crests, weakly granular between the crests; hands large, cordate at base, the inner part of the upper surface depressed, very moderately convex, thickly covered with punctate anastomosing elevations, which are scarcely raised above the level of the surface, without a trace of secondary keels; outer part of upper surface of hands coarsely granular, with traces of a secondary keel in the distal part; finger-keel strong, smooth; inner edge of hand bluntly granular; width of hand considerably exceeding the length of hand-back.

Legs.—Anterior surface of femora finely granular, the lower edge coarsely so; tarsi of the two last pairs of legs with 2-3 external and 5-6 internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes; the superior process shorter than the lateral lobes.

Operculum subcordate, broader than long, emarginate behind but not cleft longitudinally.

Pectines with 19 teeth, scape rounded at the base behind and free of teeth for one-fourth to one-fifth of its length.

Measurements in Millimetres.—Total length 103; greatest length

of carapace $15\frac{1}{2}$; width of carapace 15; distance of eyes from anterior median edge $9\frac{1}{2}$; width of hand $12\frac{1}{2}$; length of hand-back 10, of movable finger 17, of tail 56; width of first caudal segment 6, of fifth caudal segment 4.

Male (in alcohol).

The male presents the following differential characters:—

Carapace as long as the first and second caudal segments together.

Cauda more robust.

Terga.—Whole surface densely and finely granular, the last segment coarsely granular at the sides and behind.

Sterna minutely granular at the lateral borders in segments 1–4.

Palps with all the segments much longer than in the female; hands long and narrow, with very long fingers; length of hand-back exceeding breadth of hand; inner part of the upper surface of hand flat, concave distally, weakly granular, nearly smooth in the middle, with two weak secondary keels; outer part of the upper surface very weakly granular, nearly smooth; inner edge of hand scarcely denticulate.

Operculum transversely oval, much broader than long, completely cleft longitudinally.

Pectines with 26–28 teeth, the scape rectangular at the base behind and therefore toothed along its whole length.

Besides these there are other differences which may be put down to the specimens having possibly been captured in different localities. The colour of the male, for instance, is much lighter, being brown with a large black patch on the carapace on each side of the interocular area, the palps reddish yellow with dark crests, the legs, vesicle, interocular area, and the hands ochraceous; further, the surfaces of the humerus and brachium are much more sparsely granular, the infero-lateral keels in segments 2 and 3 and the median keels in segment 3 of cauda are crenulated.

Measurements in Millimetres.—Total length 109; greatest length of carapace 16; width of carapace $15\frac{1}{2}$; distance of eyes from anterior median edge 10; width of hand 10; length of hand-back $10\frac{1}{2}$, of movable finger 25, of tail 65; width of first caudal segment $6\frac{1}{2}$, of fifth caudal segment 4.

Male, nearly adult (in alcohol).

This specimen resembles the female in its coloration and in the granulation of the surfaces of the humerus and brachium; the hands have the shape of those of the female but are narrower

(breadth of hand 9, length of hand-back $8\frac{1}{2}$, of movable finger $14\frac{1}{2}$), and the upper surface is thickly covered with rather coarse and isolated granules; secondary keels as in the female; cauda, terga, sterna, operculum, and pectines as in the adult male; pectines with 28 teeth.

Locality.—An adult female and a nearly adult male labelled “Namaqualand,” Cape Colony (*L. Pêringuey*), and an adult male with no history attached.

This species is very closely allied to *O. pallidipes*, and bears to the latter species very much the same relation that *O. macer* does to *O. fossor*. Almost the only important difference lies in the granulation of the carapace, the numerous very coarse granules on each side of the interocular area, so characteristic of *O. pallidipes*, are replaced by comparatively fine granules in *O. peringueyi*. Further, in *O. pallidipes* the carapace is much narrower in proportion to its length and its sides are abruptly deflected and very steep, being nearer to the perpendicular than to the horizontal; in *O. peringueyi*, on the contrary, the middle part of the upper surface of the carapace passes over quite gradually into the sides, which are inclined at the most at an angle of 45° , and the length of the carapace is but slightly in excess of its breadth.

OPISTHOPHTHALMUS LATICAUDA, n. sp.

Plate IV., fig. 6.

Male (dry).

Colour reddish brown, legs and palps lighter underneath; the mandibles, fingers, finger-keel, upper and lower posterior crests of the humerus and brachium, the maxillary processes of the first and second pairs of legs, the infero-lateral keels of first three caudal segments and the greater part of ventral surface of abdomen blackened; carapace along the borders of the interocular area also darker.

Carapace longer than wide, as long as the first and second caudal segment and one-fourth of the third; its interocular area weakly granular in front, smooth on the convexities behind, the anterior edge between the eyes and the triangular area distinctly, if somewhat weakly, granular; sides of the carapace coarsely granular, especially along the borders of the interocular area; median eyes more than a quarter of the length of carapace from the posterior border; median groove distinctly forked in front.

Terga densely and minutely granular, with coarser granules in the posterior half of segments 3–6; seventh segment coarsely granular,

except on the anterior median part; segments 3-6 weakly keeled on the posterior half, segment 7 with a low, broad, coarsely granulated elevation on each side behind, but with no median elevation.

Sterna smooth, segments 1-4 finely granular at the lateral borders; last segment smooth in the middle, distinctly keeled on each side, the region between the keel and the lateral margin with a depression posteriorly and a few large and small granules in front of the depression.

Cauda very wide and robust; the upper surface smooth, granular only in segment 1 towards the sides; upper crests granular, the terminal tooth enlarged and spiniform in segments 2-4; upper lateral crests granular, in segment 5 weak and present only on the anterior half; infero-lateral crests distinct and smooth in segment 1, weakly crenulated in segment 2, granular in segments 3 and 4; infero-median crests obsolete in segment 1, just visible in segment 2, weakly granular in segments 3 and 4; intercarinal spaces smooth, if a few isolated granules be excepted; basal segment quite smooth below; fifth segment robust, less than three times as long as broad, its three inferior keels with strong, sharp teeth; breadth of second segment equalling its length along the upper median line; vesicle granular at the base below.

Palps.—All the crests of the humerus coarsely granular, upper surface of humerus sparsely granular, anterior surface with very coarse granules, inferior surface nearly smooth; upper crest and posterior surface of brachium coarsely granular; hands hairy, rather flat above and coarsely granular; finger-keel moderately strong, granular throughout, secondary keels rather indistinct; hands moderately wide, the width considerably exceeding the length of hand-back; inner edge sharply denticulate.

Legs with the lower edge of all the femora coarsely granular; tarsi of fourth leg with 1-2 external and 5 internal spines below, and 4 on the external terminal lobe; superior process shorter than the lateral lobes.

Operculum transversely oval, considerably broader than long, completely cleft longitudinally.

Pectines with 15-16 teeth, the scape rounded at the base behind and free of teeth for about one-fourth of its length.

Measurements in Millimetres.—Total length 101; greatest length of carapace $15\frac{1}{2}$; width of carapace 14; distance of eyes from anterior median edge $10\frac{1}{2}$; width of hand 11; length of hand-back 9, of movable finger $16\frac{1}{2}$, of tail 58; width of first caudal segment $7\frac{1}{2}$, of fifth caudal segment 5.

Locality.—A single specimen labelled "Calvinia" (*P. Percival*).

This species is easily distinguished from *O. granifrons*, which it resembles, by the smoothness of the ventral surface of the last abdominal and first caudal segment and by the stoutness of the tail. In the male of *O. granifrons* the fifth caudal segment is more than $3\frac{1}{2}$ times as long as broad, and the second caudal segment is considerably narrower than its own length on the upper median line. Further, in *O. granifrons* the tarsus of the fourth leg has no external spine below and only three on the external terminal lobe.

GEN. PARABUTHUS Pocock.

PARABUTHUS CALVUS, n. sp.

Plate IV., fig. 7.

Male (recently killed, in alcohol).

Colour ochraceous, the legs and palps paler than the trunk; the median eye-tubercle blackened.

Carapace wider than long, much narrowed anteriorly, the anterior width being only one-half the posterior width; median groove wide, almost smooth, except near the anterior margin of frons, where it is granular; sides of the carapace with several transverse depressions, which are almost smooth; median eye-tubercle situated in front of the middle of carapace, quite smooth, as is also a broad band extending on each side from this tubercle obliquely forwards nearly as far as the lateral eyes; rest of the carapace finely granular, the interocular area with coarser granulation; carapace with a few hairs on anterior edge, but with no trace of hairs or crests on the upper surface.

Terga.—The segments finely granular in the posterior, roughened in the anterior part; the anterior six with a median keel; the seventh with four granular crests, its upper surface smooth at the sides, densely and finely granular (shagreened) on the shallow median depression.

Sterna smooth and polished, with traces of fine granulation at the extreme lateral borders; the last segment with four obsolete keels, entirely smooth.

Cauda very stout, the first three segments of equal width, as wide as the breadth of the carapace across the median eyes, the fourth segment narrower than the preceding ones, the fifth narrower than the fourth; first two caudal segments flattened above, with a shallow, elongate depression in the middle, which is shagreened in the same manner as that on the last tergal segment, the upper surface at the anterior edge of the depression projecting forwards

step-like and then suddenly descending perpendicularly; segments 3-5 convex from before backwards, but concave from side to side, only the third being provided with a small patch of shagreened surface in the middle; first three caudal segments with ten keels, the three upper pairs of keels weakly granular, but equally developed in each segment (the uppermost parallel, not converging behind), the two inferior pairs smooth in segment 1, weakly granular in segment 2, and more coarsely granular in segment 3, these three segments smooth and polished between the keels; fourth caudal segment with the uppermost crests weakly granular and all the other crests practically or quite obsolete, its whole surface, with the exception of a very few low remote granules smooth and polished; fifth caudal segment with the uppermost crests practically obsolete and represented only by a few weak granules, the inferior lateral crests obsolete anteriorly, represented posteriorly by 3 coarse granules followed by 2 large teeth; upper and lateral surfaces of fifth segment smooth and polished, the inferior surface with a few granules along the middle and 3-4 similar ones scattered on each side, otherwise also smooth and polished; vesicle with several rows of granules on the lower surface.

Palps.—Superior and anterior surface of humerus roughened, with parallel edges, bordered by a row of granules, the anterior surface with two irregular series of coarse conical granules; brachium scarcely roughened on the surface, the front edge with a few granules distributed along its length and a large tooth at the base; front and hind edges of brachium nearly parallel, only slightly converging distally; hand long and slender, much thinner than the brachium (when viewed from above); fingers long, incurved, the movable one two and a half times as long as the hand-back.

Legs with a row of granules along the upper and lower edges of femora, otherwise almost smooth.

Pectines shorter than the carapace, with 25-26 teeth, the posterior basal angle of the scape produced into a broad prominent lobe.

Measurements in Millimetres.—Total length 63; length of carapace 7; width of carapace 8; distance of eyes from anterior edge 3; length of humerus (along upper side) $5\frac{1}{2}$, of brachium $6\frac{1}{2}$, of hand-back 3, of movable finger $7\frac{1}{2}$; width of humerus $1\frac{3}{4}$, of brachium (at base of large anterior tooth) $2\frac{1}{4}$, of hand $1\frac{3}{4}$; length of tail 38, of first caudal segment 5, of fifth 7; width of first caudal segment $6\frac{1}{4}$, of fourth $5\frac{3}{4}$, of fifth $5\frac{1}{4}$, of vesicle $4\frac{1}{4}$; height of first caudal segment $4\frac{1}{2}$, of fifth $3\frac{2}{3}$, of vesicle 3.

A single specimen collected by Mr. Max Schlechter in the Onder Bokkeveld, Bokkeveld Mountains, Calvinia.

The sex of this specimen is beyond doubt, as the usual pair of chitinous stylets, characteristic of the male, is present, attached to the soft skin at the posterior end of the genital orifice. This species is well characterised by the smoothness and the remarkable thickness of the cauda. It comes nearest to *P. planicauda*, Pocock, the female and male of which have similar palps,* although the movable finger in the latter species is shorter in proportion to the length of the hand-back. The shagreened part of the caudal segments is also similar in both species. The lobe-like basal angle of the scape of the pectines is peculiar, exactly resembling that occurring in the female of *planicauda*.

Synopsis of the Species of OPISTHOPHTHALMUS

in the collection of the South African Museum, which have the median groove of the carapace distinctly forked in front and the eye-tubercle situated far behind the middle of the carapace.†

a. Under side of the first 4 caudal segments convex, not grooved longitudinally, with the median crests quite obsolete, represented at most by black lines. (The superior process of the tarsi much shorter than the lateral lobes.)

a¹. External lobe of tarsus of 4th leg with 3 spines; interocular area of carapace nearly smooth, the granules bordering it only slightly coarser than the rest. Little Bushmanland ♂ ♀ *O. schlechteri*, n. sp.

b¹. External lobe of tarsus of 4th leg with 4 spines; interocular area granular on the anterior half, bordered on each side by a strip of coarser granules.

a². Entirely black; lower surface of abdomen and of first 3 caudal segments smooth and polished, that of 4th caudal segment somewhat roughened; terminal tarsus of 4th leg with 1 external spine below. Namaqualand, C. C. ♂ *O. ater*, n. sp.

b². Ochraceous to brown, the abdomen darker; lower surface of last abdominal and of first 4 caudal segments densely and finely granular in the ♂, smooth in the ♀, except in the 3rd and 4th caudal segments, which are also thickly granular; terminal tarsus of 4th leg with no external spine below. Namaqualand, C. C. ♂ ♀ *O. planicauda*, n. sp.

b. Under side of the 4th caudal segment with distinct median and lateral keels, the surface distinctly grooved between the keels.

a³. Last segment of the sterna always coarsely, though often somewhat weakly granular, at least in the middle; terminal tarsus of 4th leg

* The specimens described by Pocock (Ann. Mag. N. H. (6), vol. iii., 1889, p. 345) as the male of *planicauda* belong to another species.

† *O. fossor* with occasionally partially developed fork, *O. intermedius*, Kraepelin, with incompletely developed fork, and *O. latro*, Thor. (the last two being unknown to me), are the only species omitted, which may possibly be brought into this category.

with a single row of spines below (in *capensis* occasionally with a minute external spine in addition) and with 3-4 spines on the external terminal lobe.

- a*⁴. Interocular area of carapace smooth or nearly so, not bordered on each side by a strip of coarse granules; sterna coarsely granular in all the segments. (Tarsus of 4th leg with 4 spines on the external lobe, superior process shorter than the lobes.) Port Elizabeth * ♂ ♀ *O. pictus*, Kraep.
- b*⁴. Interocular area normally granular or rugoso-granular in the anterior half; sides of the carapace coarsely granular, especially along the borders of the interocular area; the ultimate and often, also, the posterior part of the penultimate segment of the sterna in the ♀, and the posterior 2-5 segments in the adult ♂, granulated.
- a*⁵. Finger-keel and upper crest of brachium composed of a row of coarse granules; outer part of upper surface of hand coarsely granular; superior process of tarsi shorter than the lateral lobes. (Legs pale ochraceous; external lobe of tarsus of 4th leg with 3 spines only.) Namaqualand, C. C.
♂ ♀ *O. granifrons*, Pocock.
- b*⁵. Finger-keel almost smooth; superior process of tarsus at least as long as the lateral lobes.
- a*⁶. Legs and interocular area of carapace pale ochraceous (becoming reddish yellow in old spirit specimens); terminal tooth of upper crests of 2-4. Caudal segments mostly enlarged and spiniform.
- a*⁷. Upper crest of brachium composed of a row of coarse granules; tarsus of 4th leg with 3 spines on the exterior terminal lobe. Clanwilliam
♂ ♀ *O. leipoldti*, n. sp.
- b*⁷. Upper crest of brachium almost smooth; tarsus of 4th leg with 3-4 spines on the outer lobe. Cape, Stellenbosch ♂ ♀ *O. capensis*, Herbst.
- b*⁶. Legs (and whole animal) of a rich deep reddish brown colour above, paler below; anterior edge of spiracles straight or nearly so, the posterior edge arched backwards, the space between the edges thus considerably wider at the middle than at the ends of the spiracle; tarsus of 4th leg with 3 spines on the external lobe; terminal tooth of upper caudal crests rarely enlarged. Tulbagh ♂ ♀ *O. fuscipes*, n. sp.
- b*³. Last segment of the sterna smooth in the middle (sometimes furnished in the ♂ of *pallidipes* with exceedingly minute scattered granules, invisible to the naked eye); terminal tarsus of 4th leg with a double row of spines, viz., 1-3 external and 4-6 internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes. (Superior process of tarsus shorter than the lateral lobes.)

* Also Orange Free State (Kraepelin).

α^8 . Interocular area of carapace granular on its anterior half (and bordered laterally by coarse granules); under side of humerus smooth; pectines of σ with about 15 or 16 teeth, the scape rounded at base behind and free of teeth for about two-sevenths of its length. Hand of σ stout, coarsely granular above, its breadth much exceeding the length of hand-back.
Calvinia σ *O. laticauda*, n. sp.

δ^8 . Interocular area smooth (in *pallidipes* sometimes weakly granular anteriorly); under side of humerus coarsely granular; pectines in σ with 24–31 teeth, the scape rectangular at the base behind and toothed throughout its length; pectines in φ with 16–22 teeth, the scape rounded at the base behind and free of teeth for about one-fourth to one-sixth of its length; hand of adult σ nearly smooth above, slender, with very long fingers, the breadth of hand not exceeding the length of hand-back.

α^9 . Sides of the carapace abruptly deflected and very steep, very coarsely granular, especially along the borders of the interocular area. Namaqualand, van Rhijnsdorp, Clanwilliam, Calvinia, and Piquetberg Divisions
 σ φ *O. pallidipes*, C. L. Koch.

δ^9 . Sides of the carapace gradually and not very much deflected, with no coarse granulation bordering the interocular area. Namaqualand, C. C. σ φ *O. perringueyi*, n. sp.

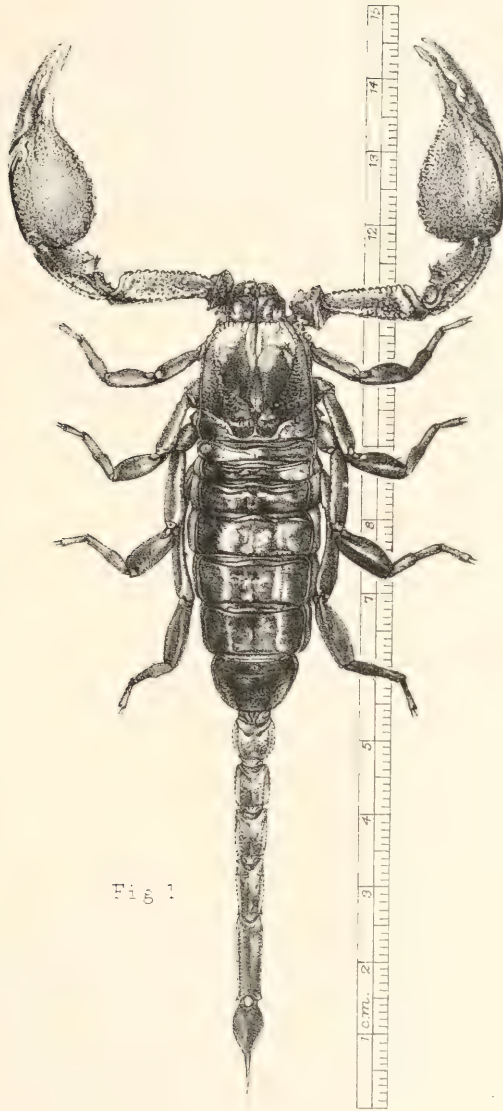
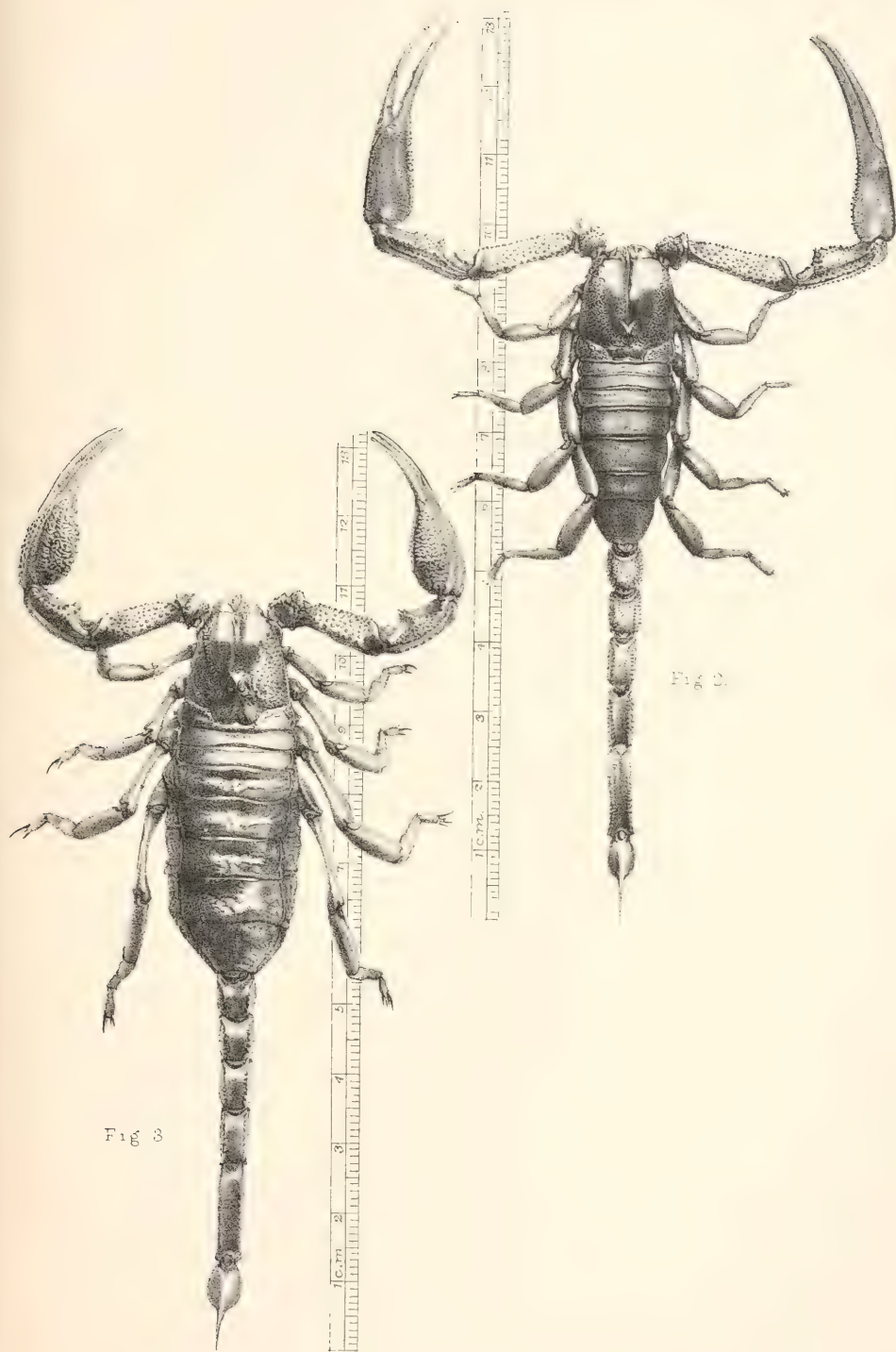


Fig. 1.

West, Newman lith.

Fig. 1. *Opisthophthalmus karrooensis*. ♀ (nat size.)



West Newman lith.

Fig. 2. *Opisthophthalmus karrooensis*, ♂ (nat size)
 Fig. 3. *O. flavescens*, ♀ (nat size)

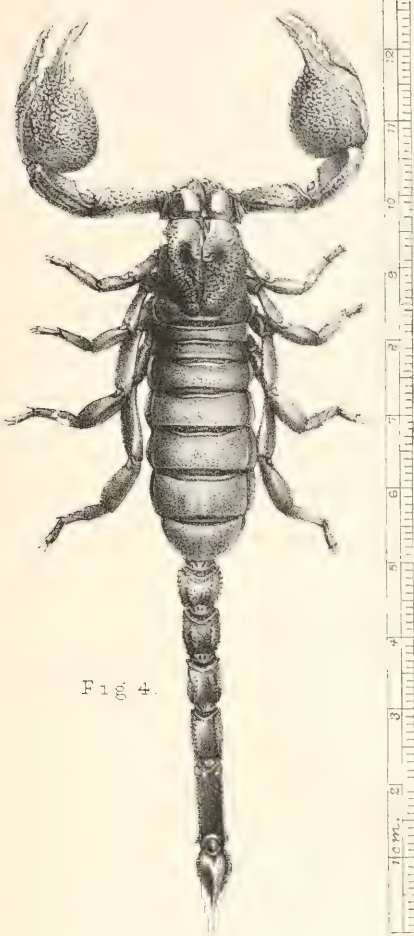


Fig. 4.



Fig. 4a.

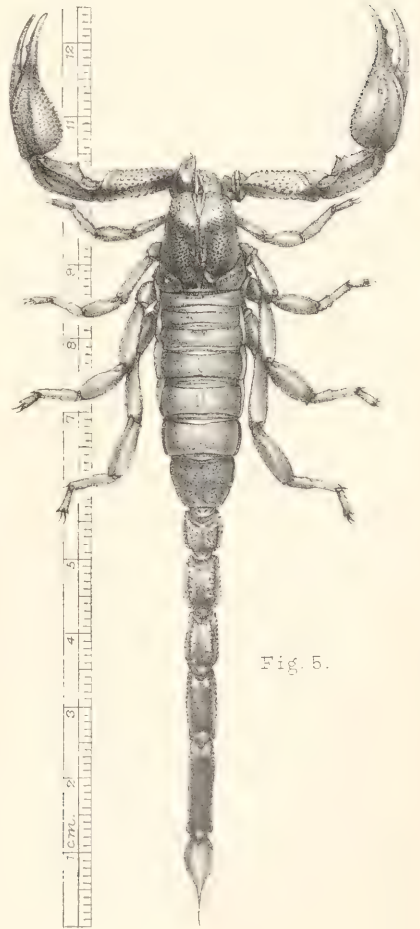


Fig. 5.

West, Newman lith

Fig 4. *Opisthophthalmus fossor*, ♀ (nat size)
 Fig. 4a. palp. of ad. ♂ (nat size) Fig. 5. *O. leipoldti*: (nat size.)

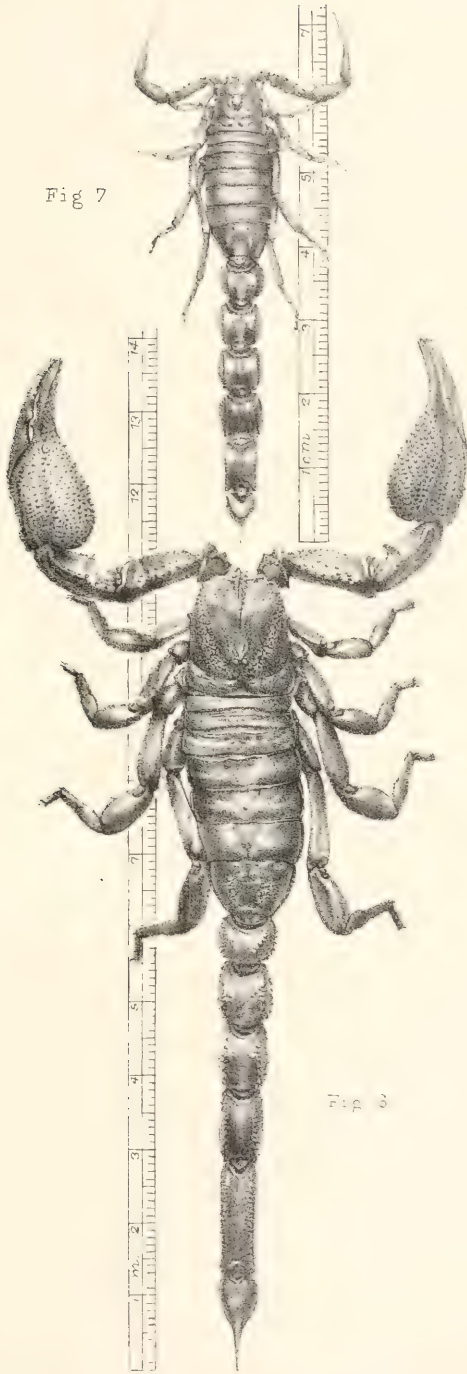


Fig. 6. *Opisthophthalmus laticauda*. ♂ (nat size)
Fig. 7. *Parabuthus calvus*. ♂ (nat size)

West. Newman lith

II.—*Description of some New or Little Known South African Mutillidæ in the Collection of the South African Museum.*
—By L. PÉRINGUEY, Assistant Director.

THE number of described South African species, exclusive of two which are in synonymy, and one the identity of which is dubious, is 49. Twenty-three of these are represented in the Cabinet. I am now giving the description of 87 more, which I have reason to believe have not been described hitherto, with perhaps the exception of 2, the description of which I have not been able to procure.

So far as is now known the recorded South African species exceed by 12 the Mutillidæ of British India, including Ceylon and Burma.

The two sexes of 9 species only out of 139 are ascertained ; it is, however, probable that 20 males described singly by different authors, myself included, will prove to be identical with females already known.

Bingham describes both sexes of 5 species only in his 'Fauna of British India,' London, 1897, out of 120 species known to occur there. This goes to prove that it is not only in South Africa that little attention or observation has been paid to that family of Hymenoptera.

In South Africa the sexes of the following species are now known with certainty :

Mutilla thyone, Pér., bred from the cocoons of a Clythrid beetle by Dr. H. Brauns.

M. sycorax, Sm., bred by myself from the mud-nests of *Pelopæus spirifex*.

M. capicola, Pér., caught *in copulâ* by myself.

M. galanthis, Pér., caught *in copulâ* by myself.

M. capensis, Sauss., caught *in copulâ* by myself.

M. purpurata, Sm., caught *in copulâ* by Dr. H. Brauns.

M. speculatrix, Sm., caught in copulâ by Dr. Purcell, Mr. R. Lightfoot, and myself.

M. helle, Pér., both sexes found drowned in a pool of water, still adhering to one another.

M. aglaëa, Pér., bred by Dr. H. Brauns from the nest of a *Ceratina*.

It is also most probable that *Mutilla angulata*, Sm., is the male of *M. horrida*, Sm., and that the males of *M. tecmessa* and *M. agave* are what I believe them to be, but I have some doubt as to the identity of the male of *M. themis*, although both sexes were sent to me as having been caught in coitû; *M. exaltata*, Sm., might also prove to be the male of *M. alcyone*, Pér.

It is difficult to estimate the number of South African species, but I think that it will be probably double the one now known. Dr. H. Brauns, who is one of the few entomologists who have paid special attention in South Africa to the collecting of the Order, has collected in the vicinity of Port Elizabeth no less than 45 species. In my rare collecting trips I have found an abundance of them on the edge of the Karroo, while Namaqualand, Damaraland, and neighbouring territories, have not yet been searched systematically for that special group of parasitic insects.

In spite of their great resemblance all the world over, there is a difference in the general appearance and colouring of the forms from the western parts of South Africa and from the eastern ones; that difference is not so well marked as in other Orders, but yet it is noticeable, and will doubtless be more apparent when more species have been collected.

For facilitating the identification I have divided the species in different groups according to the disposition or absence of the abdominal bands or spots. This arrangement may prove to be only provisional, but I have found it so far to fail less egregiously than the others I have attempted.

ORDER HYMENOPTERA.

TRIBE FOSSORES.

FAMILY MUTILLIDÆ.

GEN. APTEROGYNA, Latreille,
Gén. Crust. & Insect., iv., 1809, p. 121.

Synopsis of Species.

♀ Head, thorax, legs, and basal segments of abdomen pale
testaceous *A. cybele*.

♀ Posterior part of the head, thorax, and first abdominal
segment testaceous red; legs fuscous *A. clymene*.

♂ Black, with the two basal abdominal segments, the an-
tennæ and legs red *A. mnemosina*.

APTEROGYNA CYBELE.

Female.—Head, antennæ, thorax, first abdominal segment and legs testaceous red, the other abdominal segments black; the whole body is clothed with long pale hairs; head striolate in the centre and clothed besides the hairs with a very short, silky pubescence; prothorax subparallel laterally and separated from the mesothorax by a very distinct transverse groove, mesothorax hexagonal, meta-thorax sloping, the posterior part with a sharp ridge, emarginate in the middle; first abdominal segment very rugose, the second, third, and sixth distinctly striolate, the fourth and fifth smooth; the third, fourth, and fifth have a narrow margin of moderately dense, silky, whitish hairs; ventral carina of the basal segment very short and dentiform. Length 6–12 mm.

Hab. Cape Colony (Worcester, Namaqualand).

Allied to *A. savignyi* from Egypt.

APTEROGYNA CLIMENE.

Female.—Resembles very much *A. cybele*, but the colour of the thorax and first abdominal segment is redder; the head is infusate

laterally and in front and is occasionally quite black; the legs are black, or piceous black, and the sculpture of the thorax and abdomen consists of deeper punctures, and in the latter the striolation is more distinct and the intervals are almost longitudinal on the second and third segments. Length 6–13 mm.

Hab. Cape Colony (Cape Town, Namaqualand, Port Elizabeth).

Like the preceding one, this species varies much in size, and in the larger examples the punctures and the striolation are much more striking. The large examples resemble *A. mutilloides* from India.

APTEROGYNA MNEMOSINA.

Male.—Head, thorax, and the four apical abdominal segments black; metathorax with a ferruginous patch above the posterior declivity; first and second joints of abdomen red; antennæ and legs testaceous red; the whole body clothed with short, very dense greyish hairs; head small, thickly pubescent, eyes not emarginate; thorax roughly punctured, metathorax with two median grooves diverging from the apex to the base, scutellum much raised, posterior declivity truncate; abdomen closely punctured, second segment narrowly grooved from base to apex in the middle, third segment also with a narrow shallow median line, and fringed with a greyish dense pubescence, the other apical three segments clothed with the same pubescence which has a silky, whitish sheen laterally; wings hyaline with the nervures and the stigma brown and a sub-apical brown patch reaching from the upper margin to one-third of the width. Length 15 mm.

Hab. Damaraland (Walfish Bay).

Size and shape of *A. globularia*, Fabr., but otherwise coloured; the antennæ are much more filiform, the abdomen is closely punctured instead of being striolate, and the second and third segments are not grooved in the dorsal part in *A. globularia*.

GEN. MUTILLA, Linn.,
Syst. Natur., Ed. 10A, 1758, pp. 343, 582.

(FEMALES AND MALES.)

FIRST DIVISION.

Synopsis of Species.

BASAL ABDOMINAL SEGMENT LONG OR VERY LONG, NODOSE AT APEX.

A³.—DORSAL PART OF ABDOMINAL SEGMENTS HAVING APICAL BANDS OF WHITE OR ORANGE HAIRS, BUT NO MEDIAN PATCH ON THE SECOND SEGMENT.

a⁴. First abdominal segment long, petiolate.

b³. First abdominal segment banded, bands non-interrupted.

♀ Thorax subhexagonal, more attenuate from the median part to the apex than in the anterior part, ferruginous red; head and abdomen black, first segment equal in size in both sexes, intermediate and posterior tibiæ with only one submedian spine } *capicola*.
♂ Prothorax and mesothorax red, metathorax black, subquadrate; second abdominal segment without any ventral carina }

a³. First abdominal segment very long.

b². Two basal segments banded.

♀ Thorax subhexagonal and very much attenuate in the posterior part, median part with a lateral, conical tubercle; apical band of the second abdominal segment produced in the middle in the shape of a narrow triangle reaching to about one-third of the length; tibiæ with only two spines } *beroe*.

♀ Body entirely black, elongate, thorax similar in shape to that of the preceding species, apical band of first segment interrupted laterally } *syriax*.

a². First abdominal segment very long and slender in the male, moderately long in the female.

b¹. Three basal segments banded.

♀ Thorax diagonal laterally from the anterior angle to about one-third of the length, outer sides subparallel, basal part nearly as broad as the apical one; head and abdomen black; thorax ferruginous red } *galanthis*.
♂ Whole upper part of the thorax red, metathorax a little attenuate behind }

A².—DORSAL PART OF ABDOMINAL SEGMENTS WITH MEDIAN APICAL PATCHES AND BAND.

a¹. First abdominal segment very long in the male, subsessile in the female.

♀ Thorax very long, hexagonal, black with a large dorsal reddish patch; first and second abdominal segments with a small apical white patch, second segment bright red, third segment clothed with a pubescent band hardly interrupted in the centre; tibiae with a supra-apical spine *eurydice*.

♀ Thorax long, angular laterally; abdomen red with the apex of the second segment, the third and fifth black, third and fourth clothed with a white band, basal one with a central patch *danaë*.

A¹.—ABDOMINAL SEGMENTS WITHOUT WHITE BAND OR SPOT.
(No female.)

(FEMALES AND MALES.)

SECOND DIVISION.

C².—BASAL SEGMENT SUBSESSILE OR SESSILE IN THE FEMALE AND IN THE MALE.

A⁶.—NO BAND OR SPOT ON THE ABDOMINAL SEGMENTS.

♀ Light testaceous, covered with a short, dense flavescent pubescence; head and apical joints of antennae black; thorax sub-parallel *polyxene*.

A⁵.—ABDOMINAL SEGMENTS WITH BANDS, BUT NO SPOT.

*a*⁹. The second abdominal segment with an interrupted band.

*a*⁸. The two basal abdominal segments with a band, non-interrupted. (No female.)

♀ Head with three very distinct ocelli; thorax truncate at apex, much constricted laterally in the middle with the posterior part produced triangularly on each side, disk with a sharp spine at about the scutellary part *erigone*.

♀ Thorax narrowing from apex to base, where it is one-fourth narrower, anterior angles sharp, outer sides slightly sinuate at about one-fourth of the length and having three sharp and very distinct lateral spines from the median part to the top of the declivity *evadne*.

*a*⁷. The three basal abdominal segments with a white band, non-interrupted.

*b*². Bands straight.

♀ Thorax parallel, not narrower at base than at apex, outer sides with five short teeth, two of which are formed by the anterior and posterior angles, posterior part truncate perpendicularly, top of the declivity with a sharp, short tooth on each side and one in the middle, sides serrulate *althæa*.

♀ Thorax a little sloping in the anterior part, and diagonally attenuate from the anterior angle to the base, where it is narrowed to about half the width, sides subserrate, not emarginate; tibiae spinose *alcis*.

♀ Thorax subhexagonal, median part aculeate, anterior part not incised, or hardly so laterally, posterior part one-third narrower at base than the apex, declivity subtruncate, sides of thorax not serrulate, first abdominal segment subelongate, petiolate; tibiae with one or two submedian spines *baucis*.

♀ Thorax truncate and serrulate at apex, straight laterally from one-third of the length and tridentate, attenuated from there to the declivity in the shape of a broadly truncate cone, outer sides carinate and serrulate to the very base, declivity abrupt *latona*.

♀ Thorax long, straight laterally, but with the posterior part narrowed but also straight, abdomen oblong, first segment as wide at apex as the base of the second, which is very slightly amplate in the middle *aglaë*.

♀ Thorax truncate at apex, parallel laterally for one-third of the length, and with four short teeth, narrowed from there to the declivity, which is very abrupt, sides serrulate, abdomen pyriform *ilythia*.

b¹. Bands triangular on the first and second segments.

♀ Thorax deeply incised laterally at about one-third of the length, parallel from there to the perpendicular declivity, deeply foveate with the intervals distinctly carinate from apex to base; head striolate, first basal segment entirely covered by a triangular patch, that of the second segment produced triangularly towards the median part which it does not reach *callirhoë*.

♀ Thorax similar in shape to that of *M. callirhoë*, but not so deeply foveate, and with the intervals also raised but not carinate longitudinally, first basal segment with a narrow apical band; head with two distinct ocelli *glauce*.

♀ Thorax similar in shape to that of the two preceding species, and similar in sculpture to that of *M. glauce*; band on first abdominal segment broadly triangular, that on the second segment produced in a broad triangle, the point of which reaches the median part; head without ocelli *electra*.

a⁶. The three first basal segments of abdomen banded, band on third segment interrupted in the middle. (No female.)

1.

C¹.—ABDOMEN SESSILE IN BOTH SEXES.

Thorax incised laterally at a short distance from the apex, parallel from there to the declivity which is perpendicular, deeply foveate with the intervals carinate.

♀ Head not quite as broad as the thorax, dark with a small ferruginous round patch on the vertex, pubescent band of abdomen white *callisto*.

♀ Head broader than the thorax, red with the anterior part black, abdominal bands bright orange } *tecnessa*.
 ♂ Black, with the prothorax and mesothorax, scutellum and tegulae red; mesothorax with two conspicuous longitudinal grooves

♀ Head extremely large, mandibles very long, and with a long, sharp, incurved tooth on the superior and inferior margin at about the median part; thorax very sharply angulate in the anterior part, and bisinuate laterally, posterior angle also angular } *helle*.
 ♂ Head not so broad as thorax, transverse quadrate; body black, with the exception of the metathorax, scutellum, and tegulae, which are red

α^5 . The three first basal segments of abdomen banded, band of the second abdominal segment emarginate in the anterior part, or interrupted in the centre.

♀ Thorax broadest in the anterior part, incised at about one-fourth of the length, subparallel from there to the posterior declivity; abdominal bands yellow, apical band of the second segment emarginate in the centre } *berenice*.

♀ Thorax very sloping diagonally on each side at apex, subparallel laterally for two-thirds of the length, and amplified in the posterior part for the remaining third; abdominal bands white, the one on the second segment incised in the middle in the shape of a V } *purpurata*.

♀ Thorax truncate at apex, parallel or nearly so laterally for half the length, gradually amplified from there to the declivity which is perpendicular, with the upper margin and the sides distinctly denticulate; central part only of apex of first segment banded, second segment with two nearly coalescent patches in the middle, band on third segment non-interrupted } *antiope*.

α^4 . Bands on the second and third segments interrupted in the centre. (No female.)

α^3 . The four basal segments of abdomen with non-interrupted bands.

♀ Thorax gradually narrowed from apex to base, very slightly sinuate in the middle, truncate behind with the sides of the declivity not serrate; tibiae non-spinose } *taygete*.

α^2 . The four intermediate abdominal segments with a non-interrupted band, basal and apical ones without.

♀ Thorax gradually narrowed laterally from apex to base, where it is less broad by one-fourth, a rounded projection a little before the median part; abdomen pyriform; tibiae without spines } *melete*.

♀ Thorax subparallel, a little broader at base than at apex, not emarginate laterally; abdomen pyriform; tibiae spinose } *ariadna*.

α^1 . The five basal segments of abdomen with a non-interrupted band.

♀ Thorax with an ante-median, very distinct lateral blunt projection narrowed from there to the declivity, where it is only half as wide as the apex, which is slightly sloping on each side with the angle sharp, sides of the declivity serrulate; bands yellowish, the one on the second segment dilated triangularly in the median part *cassiope*.

A⁴.—ABDOMINAL SEGMENTS BANDED, SECOND SEGMENT WITH A MORE OR LESS OVATE SPOT.

*α*². The three basal segments banded.

Thorax long, subparallel, slightly bisinuate laterally, a little broader at base than at apex; abdomen subpedunculate, bands and spot on the second segment orange-yellow, the spot elongate, median and basal; tibiæ spinose *omphale*.

Thorax long, nearly straight laterally; abdomen subsessile, oblong, second segment not ampliate, spot ovate, situated near the base, bands and spot white; tibiæ without spines *thyone*.

Thorax gradually attenuate from apex to base; abdomen slightly subpedunculate, spot on the second segment connected with the band on the first segment; tibiæ spinose *leda*.

Thorax gradually amplified laterally to about the median part and gradually narrowed from there to the declivity, which has a conspicuous median tubercle on the upper margin, spot elongate, apical, bands on the second and third segments twice interrupted.. *anna*.

Thorax parallel, spot subbasal, basal segment not banded; tibiæ spinose *ceto*.

Thorax straight laterally but a little narrower at base than at apex, first segment banded, spot elongato-ovate, nearly median; tibiæ not spinose *iris*.

Thorax gradually amplified laterally from apex to base, slightly emarginate in the centre, spot central; tibiæ not spinose.. . . . *melpomene*.

Thorax parallel, second segment with an elongato-ovate median patch and a lateral not dense patch on each side of it *hecuba*.

*α*¹. Basal segment with a patch instead of a band, third segment only with an uninterrupted band.

Thorax parallel, patch on the second segment round, median . . . *alecyone*.

A³.—ABDOMEN WITH TWO MEDIAN SPOTS ON SECOND SEGMENT.

*α*³. No band or spot on the first segment.

*b*². Head not broader than the thorax.

*c*². Without antennal tubercles.

*d*¹. Third abdominal segment banded, band not interrupted in the centre.

♀ Thorax long and slender, sloping on each side at apex, attenuated laterally from apex to base, yellowish in the anterior part, black in the posterior, the two spots on second segment set close to one another, flavescent, band on third segment white *circe*.

$\bar{c}^6$. Band interrupted in the centre.

♀ Thorax long and slender, a little attenuate at both ends, deeply incised laterally towards the median part, both ends of incision tuberculate } *themis*.
 ♂ Black; abdomen with a lateral white band broadly interrupted in the middle on all segments but the first, the bands on second segment invading it all round, and leaving only one hexagonal, denuded, central patch }

♀ Thorax long, sloping on each side at apex, straight laterally, striolate.. .. . *persephone*.

Thorax short, truncate at apex, straight laterally, slightly tuberculate along the upper edge of the declivity *calypso*.

$\bar{c}^5$. Third and fourth segments banded, bands interrupted in the middle.

Thorax long, sloping on each side at apex, straight laterally .. *penelope*.

$\bar{d}^4$. Two lateral patches on second, third, and fourth segments

Thorax amplified laterally from apex to base and emarginate laterally for half the length, a lateral patch on the third and fourth segments disconnected from the outer margin *thyas*.

b^1 . Head broader than the thorax.

c^1 . With antennal tubercles.

$\bar{d}^3$. Bands not interrupted, third abdominal segment banded.

Head very large, thorax as broad at base as at apex but sinuate laterally.. .. . *ino*.

Third and fourth abdominal segments banded; head moderately large, rounded behind; thorax with anterior angles projecting, emarginate laterally but as broad at base as at apex *acrisione*.

$\bar{c}^2$. Third, fourth, and fifth abdominal segments banded.

Head very large, base deeply emarginate; thorax parallel, short.. *niobe*.

Head very large, base not emarginate; thorax moderately long with the anterior angles very sharp and projecting, median part sinuate laterally *bellona*.

Head very large, base slightly emarginate; thorax aculeate laterally in the anterior part, short, narrowly incised laterally in the middle *pasiphaë*.

$\bar{d}^1$. All five posterior abdominal segments banded.

Head very large, truncate at base; thorax short, parallel, spots in the second segment transverse and nearly contiguous in the centre *perse*.

α^2 . Basal segment of abdomen with a median apical spot, second one with an apical spot, bands or spots on the other segments, no antennal tubercle.

c³. Third abdominal segment banded.

b². Head deeply scrobiculate, not broader than the thorax.

Thorax deeply incised laterally in the anterior part, nearly straight from there to the base.

Thorax moderately short, deeply foveate, intervals of foveæ raised, sharp, upper margin of declivity not denticulate.. .. *andromeda*.

Thorax subelongate, intervals of foveæ subcarinate longitudinally in the median part, upper margin of declivity serrate *arsinoë*.

Thorax distinctly carinate longitudinally in the central part of the disk, upper margin of the declivity conspicuously denticulate .. *hecate*.

b¹. Head striolate, broader than the thorax, the latter distinctly carinate longitudinally.

Thorax as broad as long, incised latterly in the anterior part, and slightly amplify from there to the base, where it is a little broader than the anterior part.

Head not very much broader *artemis*.

Head broader than the thorax, the latter short, parallel *parca*.

c². The four intermediate segments with an apical, median patch.

Head as broad as thorax, the latter short, carinate longitudinally, the carinae a little wavy behind *agave*.

c¹. All abdominal segments banded, including the first.

Thorax parallel, first basal segment with a broad yellow band interrupted in the middle, second joint with an elongate supra-lateral patch reaching from the base to a little short of the apex, and with a narrow flavescent, apical fringe, all the other segments clothed with a flavescent pubescence *cydippe*.

A².—ABDOMEN WITH AN APICAL AND TWO LATERAL OR MEDIAN PATCHES ON THE SECOND SEGMENT.

Thorax elongate, attenuate laterally in the posterior part, and having a distinct lateral ante-median tubercle; abdomen subpetiolate; second segment with two comma-shaped patches near the base and two round, supra-apical ones, and one on each side along the lateral margin, fourth and fifth segments with a median patch *terpsichore*.

Thorax short, subparallel, second abdominal segment with a narrow subapical flavescent patch and two supra-lateral ones in the middle, third segment with a median patch, the other posterior segments banded.. .. *pandora*.

A¹.—ABDOMEN SESSILE, BASAL SEGMENT WITH TWO LATERAL PATCHES.

a². Second segment with a patch on each side.

♀ Thorax nearly parallel, briefly incised and tridentate in the middle; first abdominal segment straight laterally; tibiæ with one row of spines *tisiphone.*

♀ Thorax subparallel laterally, but a little narrowed from the median part to the declivity, serrulate and not incised; band on second segment narrowly interrupted in the centre; tibiæ with a double row of spines *ckione.*

♀ Thorax subparallel laterally for three-fourths of the length, and with a conspicuous ante-median tooth, a little narrowed towards the base, and with the lateral angles produced in a long, sharp, conical tooth *clotho.*

*a*¹. Second and third segments with a lateral patch.

♀ Thorax subparallel and slightly incised and serrate laterally; band on the second segment reduced to two apical patches on each side of the median part *megaera.*

(MALES.)

FIRST DIVISION.

BASAL ABDOMINAL SEGMENT LONG OR VERY LONG, NODOSE AT APEX.

A³.—DORSAL PART OF ABDOMINAL SEGMENTS HAVING APICAL BANDS OF WHITE OR ORANGE HAIRS, BUT NO MEDIAN PATCH ON THE SECOND SEGMENT.

*a*³. First abdominal segment long, petiolate.

*b*³. First segment banded, bands not interrupted.

Prothorax and mesothorax red; metathorax black, subquadrate; second abdominal segment with two diverging carinæ *mnemosides.*

*b*². Two basal segments banded.

*b*⁴. The three basal segments banded.

Prothorax, dorsal part of mesothorax and scutellum red; basal segment of abdomen very broadly petiolate.. .. . *maja.*

First abdominal segment very long and slender in the male, moderately long in the female.

Thorax entirely red, with the pectus black; tibiæ with a double row of slender spines.. .. . *byblis.*

Thorax black with the dorsal part and sides of the prothorax, the dorsal part of the mesothorax and the scutellum red; tibiæ without spines *phylira.*

Thorax black with the dorsal part of the mesothorax and the scutellum red.

Eyes large, projecting, cheeks straight, aculeate at tip, space between the eye and the basal angle very short; tibiæ spinose .. *alcithoë*.

Eyes not projecting, head elongate behind the eyes; tibiæ not spinose *egeria*.

Thorax entirely red; tibiæ with a double row of long spines, basal joint of the hind tarsi dilated, compressed, and diagonally truncate at tip *procne*.

Thorax black, mesothorax and scutellum very dark ferruginous, thorax diagonal and aculeate laterally, abdominal bands flavescent; tibiæ without spines *athis*.

Head and thorax black; abdomen very dark cyaneous, almost black, second abdominal segment with a ventral, median raised line *deiopeia*.

First abdominal segment very long in the male, subsessile in the female.

♂ Black, with the dorsal and lateral part of the prothorax and mesothorax and the scutellum red; thorax sloping and aculeate; tibiæ without spines *capensis*.

A².—DORSAL PART OF THE ABDOMINAL SEGMENTS WITH MEDIAN APICAL PATCHES AND BAND. (No males.)

A¹.—ABDOMINAL SEGMENTS WITHOUT WHITE BAND OR SPOT.

♂ Light brick-red; abdomen fuscous with the exception of the first segment which is long and petiolate; eyes very large *semele*.

♂ Totally pale flavescent, second, third, and sometimes fourth segments of abdomen with a fuscous narrow margin, first joint very long, eyes very large *thisbe*.

SECOND DIVISION.

BASAL ABDOMINAL SEGMENT SUBELONGATE, SUBPETIOLATE, OR SUBSESSILE IN THE MALE.

A⁶.—NO BAND OR SPOT ON THE ABDOMINAL SEGMENTS.

Head and thorax bluish black, abdomen cyaneous, tegulæ dark ferruginous, metathorax with a short, moderately broad, sinuate groove with raised edges *amalthæa*.

Similar in shape, size, and colour, but the mesothorax, scutellum, and tegulæ are dark red *gorge*.

The second basal segment only with an uninterrupted band.

A⁵.—ABDOMINAL SEGMENTS WITH BANDS BUT NO SPOT.

*a*⁶. The third abdominal segment with an uninterrupted band.

♂ Black, clothed with a dense, dark pubescence, flavescent on the head and prothorax, scutellum produced behind in a horizontal, dentiform process on each side, apical part of the first segment and the whole of the third clothed with a white silky band; ventral part of second segment with three carinæ *acidalia*.

Basal segment without any band.

♂ Black, first and second segments of abdomen red, edged with a narrow apical black border, third segment with a white band; ventral carina of first segment produced in a vertical spine at apex; prothorax clothed with a white pubescence, metathorax not pubescent *cloantha*.

Prothorax not clothed with a white pubescence, metathorax densely pubescent at base *tyro*.

Prothorax with a white pubescence, ventral carina not spinose, the two basal segments with an uninterrupted band *speculatrix*.

♂ Black, with the mesothorax and scutellum brick-red, apical band of the second segment very narrow *hermione*.

*a*⁴. The three basal segments with an uninterrupted band.

♂ Black, with the metathorax red, prothorax with a dense greyish band, ventral part of the abdominal segment with a sharp, median ridge reaching from the base to the median part; eyes not emarginate *appias*.

Totally black, eyes deeply emarginate, joints of antennæ thick, subserrulate *cinchreis*.

*c*¹. Band on the second and third segments interrupted in the middle.

Black, tegulae red, bands orange-yellow *hippolythe*.

A⁴.—ABDOMINAL SEGMENTS BANDED, SECOND SEGMENT WITH A MORE OR LESS OVATE SPOT.

*a*². The three basal segments banded.

Black, with a white band on the prothorax, the ovate spot on the second segment broad, median and basal *nyctimene*.

A³.—ABDOMEN WITH TWO MEDIAN SPOTS ON SECOND SEGMENT.

*d*². Third abdominal segment banded.

*e*². Band not interrupted.

Black, with red thorax; no wings, head very large, tegulæ quite rudimentary, no trace of ocelli *proserpina*.

A².—ABDOMEN WITH AN APICAL AND TWO LATERAL OR MEDIAN PATCHES ON THE SECOND SEGMENT. (No males.)

A¹.—ABDOMEN SESSILE, BASAL SEGMENT WITH TWO LATERAL PATCHES.

b. Second and third segment with a lateral patch.

Black; prothorax and mesothorax and scutellum red, posterior angles of thorax very sharp and projecting, first, third and fourth abdominal segments with a lateral white patch on each side . . . *crinmys*.

FIRST DIVISION.

I.

(FEMALES AND MALES.)

MUTILLA CAPICOLA.

Female.—Head, antennæ, abdomen, legs, and tarsi black, thorax dark ferruginous red; head slightly attenuate laterally, but with the sides straight and the posterior angles well defined, broader than long, and as broad as the base of the prothorax, posterior margin straight, very closely and deeply scrobiculate, pilose in front and underneath, pubescent only in the posterior part; eyes subovate, large, prominent; prothorax straight at base, gradually amplified and rounded from the basal outer angle to about the median part, which is about one-fifth broader than the base, narrowed diagonally from there to the moderately abrupt apical dehiscence, where it is only one-half as broad as the apex, deeply and closely foveate, set with long, black bristles, convex and having three lateral sub-median tubercles, the posterior one of which is a little sharp and situated at about the median part, the other two are elongate and hardly prominent; abdomen covered with long, black hairs, turning to greyish underneath, first segment moderately long, strongly petiolate, spinose laterally at base, scrobiculate and with a moderately broad apical silky white band, second segment globose and covered with deep, sub-elongate foveæ, the intervals of which are raised, sharp, and form longitudinal sub-undulating lines, apical margin with a narrow band of white hairs all round, apex of the third and fourth segments fringed underneath with a short, greyish pubescence; abdominal carina of the first segment aculeate at base;

intermediate and posterior tibiae with only one median spine on each side of the outer groove. Length $7-10\frac{1}{2}$ mm.

Male.—Similar to the female in sculpture and colour, except that the metathorax is black, and is also more broadly foveate than in the anterior part; the shape and size of the abdomen and head are similar, the carina of the first abdominal segment identical; the eyes are not emarginate and the intermediate and posterior legs are not spinose outwardly; wings hyaline at base, infusate in the median part, and fuscous at tip. Length 9–10 mm.

Hab. Cape Colony (Cape Town, Port Elizabeth).

MUTILLA BEROË.

Female.—Black, set with long, moderately dense hairs, black on the upper part, greyish white underneath, whole thorax ferruginous red; head sub-quadrate behind and a little attenuate in front of the eyes, one-fourth less broad than the apex of the thorax, closely scrobiculate, eyes ovate, prominent; thorax slightly rounded in the anterior margin, with the outer sides amplified sub-diagonally as far as the median part, which has a somewhat sharp but not much developed tubercle and diagonally narrowed from there towards the apex, which is truncate and narrower than the base by one-third and than the median part by one-half of the width; it is closely and equally scrobiculate all over, the median tubercle is preceded by two blunt, elongated ones, and the sides of the hind part are sub-serrate; first abdominal segment aculeate laterally, moderately long, petiolate, the petiole long, one-fourth the width of the second segment, covered alike with very much elongated, narrow and shallow foveae with the intervals smooth, narrow and sharp, apical part with a broad silky white band covering a third of the petiole, second segment with a narrow band of similar texture produced in a triangle in the centre, outer side of the third segment with a short white patch, continued in the under part in a band, as is also the one on the second segment; intermediate and posterior tibiae with two single spines outwardly; abdominal carina produced in a sharp tooth at the apex. Length 15 mm.

Hab. Zambesia (Salisbury).

MUTILLA SYRINX.

Female.—Slender, totally black, clothed with a brief, faintly white pubescence, hairs moderately dense, black; head broader somewhat than the apical part of the thorax, shagreened all over, eyes large, very convex, posterior part of the head a little narrowed laterally behind the eyes, posterior angles

not much rounded; thorax long, slender, hexagonal, very much attenuate in the posterior part, not tuberculate in the median part laterally, declivous behind and covered with closely set, rough but small punctures; abdomen petiolate, the node of the first segment roughly shagreened and having an apical, silky white patch, second segment elongato-ovate, covered with closely set, deep, non-confluent punctures and having at apex a narrow band of white; ventral carina emarginate in the centre and acute at both ends; intermediate segments not fringed with greyish or whitish hairs underneath; tibiæ with one submedian spine. Length 10 mm.

As slender as *M. eurydice*, and not unlike in general facies, but the colour is very different, and there are no ventral carinæ on the second segment.

Hab. Natal (Estcourt).

MUTILLA GALANTHIS.

Female.—Head, antennæ, thorax, tibiæ, and tarsi dark ferruginous red; head slightly attenuate laterally behind the eyes, but with the sides straight and the posterior margin slightly sinuate, as broad as the base of the prothorax, very rugose and briefly pilose, eyes sub-ovate, prominent; prothorax nearly straight at base, slightly amplified laterally from the apical angle to one-third of the length, and slightly narrowed from there to the posterior declivity which is very abrupt, hardly convex, deeply scrobiculate with the intervals of the metathorax tuberculiform, outer sides angular at about the third part of the length; abdomen covered with long, greyish hairs, first segment moderately long, strongly petiolate, briefly spinose laterally at base, rugose and with a moderately broad, apical, silky white patch, second segment ovate, covered with shallow, narrow, elongated punctures with the intervals slightly raised, apical margin with a narrow white band, third segment almost entirely covered by a similar white band; outer groove of the intermediate and posterior legs with a double row of spines; abdominal carina of first segment dentate at tip.

Allied to the preceding species owing to the shape of the abdomen, the first segment of which is very distinctly petiolate; the shape of the prothorax is different, and the third segment of the abdomen has a white, very short lateral band, wanting in *M. capicola*; the intermediate and posterior legs have a double series of spines, instead of a solitary one. Length 5 mm.

Male.—Similar in shape and sculpture to the female; the colour of the thorax is brighter red, and the base of the first abdominal segment is also red; but the metathorax is not tuberculate even

laterally; the mesothorax has apparently no longitudinal groove; wings subhyaline at base, infusate at tip; eyes not emarginate; intermediate and posterior tibiae without spines.

Closely allied to the male of *M. capicola*, but the head, which is nearly as long as broad, instead of being broader than long has the posterior angles rounded; the whole of the upper part of the thorax is bright red instead of the metathorax being black, and the punctures on the abdomen are in both sexes shallower and narrower, and the intervals only very slightly raised. Length 8 mm.

Hab. Cape Colony (Cape Town, Port Elizabeth).

MUTILLA EURYDICE.

Female.—Slender, head and thorax black, the latter with a hexagonal reddish patch on the dorsal part covering two-thirds of the disk, basal part of the first and third segments and nearly the whole of the second one bright red, shining; legs and antennae piceous; head very declivous in the anterior part, eyes long, very convex, posterior angles rounded; it is slightly broader than the apical part of the thorax, clothed, as is also the thorax, with a greyish decumbent pubescence and a few hairs, and covered with closely set, moderately deep punctures; thorax long, gradually dilated laterally from the anterior angle to about one-third of the length, where it is bituberculated, and gradually narrowed from there to the declivity, where it is only one-fourth of the width of the median part, deeply scrobiculate, declivity sloping and also scrobiculate, but less broadly; abdomen petiolate, first segment deeply pitted and with a central elongate silky white patch on the node, second segment long, oblong, very little pubescent, shining, red, narrowly edged with black at apex, and with a small, median ovate, apical white patch, third segment with a broad white band; ventral carina long, dentiform at base, second segment with a median ridge dentiform at tip and reaching to about one-third of the length and a longer but equally sharp carina on each side; legs slender, nearly glabrous, tibiae without spines, femora very long. Length $10\frac{1}{2}$ – $12\frac{1}{2}$ mm.

Hab. Damaraland (Walfish Bay).

MUTILLA DANAË.

Female.—Head and thorax very dark ferruginous; dorsal part of thorax ferruginous red; abdomen red, with the apical part of the second one and the four following black; antennae sub-rufescent, legs piceous red, basal joint of fore tarsi with three long, outward spines, second one with one; head elongato-quadrate with eyes large and protruding, space between the eye and the basal part

short, outer angle rounded; it is thickly clothed with a greyish pubescence; thorax long, truncate at apex, diagonal laterally from the outer angle to a short distance from the middle, the ampliation ending in a blunt tubercle, gradually narrowed from there to the declivity, where it is one-fourth narrower than at the tip, the outer margins are subcarinate, and the disk deeply foveolate; abdomen elongato-ovate, petiolate, first segment with a by no means dense apical fringe of slightly flavescent hairs, the second segment is covered with broad foveæ, the fourth and fifth segments are clothed with a flavescent band; the ventral carina of the first segment is emarginate in the middle and dentate at apex, second joint with a short, basal median carina; tibiæ spinose. Length $8\frac{1}{2}$ mm.

Hab. Cape Colony (Namaqualand).

In colour this species approximates *M. imitatrix*, Sm., but is at once distinguished by the shape of the thorax, which is straight laterally, deeply emarginate in the middle, and equally broad at base and apex in *M. imitatrix*; in *M. danaë* the second segment is foveate, instead of being very closely punctured.

MUTILLA POLYXENE.

Female.—Head black; thorax, abdomen, legs and the six basal joints of antennæ light testaceous, it is entirely clothed with a silky decumbent golden pubescence, and with a few scattered pallid hairs; head twice as wide as long on the vertex, eyes very long, reaching from near the vertex to the point of insertion of the antennæ, oblongo-ovate and convex, a little wider than the thorax, which is subparallel, slightly emarginate laterally for about one-third of the length, with the anterior and posterior part of equal width, carinate and serrulate, posterior declivity not abrupt and with a small, sharp tooth in the centre of the upper part; abdomen pyriform, segments aciculate, pubescent, the pubescence thicker on the apical margin of all the segments, pygidium black; tibiæ without spines. Length $3\frac{1}{3}$ mm.

Hab. Cape Colony (Hopetown).

Judging from the size of the eyes and also the colour this species is probably nocturnal, and might prove to be the female of *M. semele* or *M. thisbe*.

MUTILLA ERIGONE.

Female.—Black, with the thorax red and the antennæ and legs fuscous red, the abdominal bands white; head a little broader than the apex of the thorax, eyes very large, occupying nearly the whole of the sides, the three ocelli very distinct; it is clothed with a dense

flavescent pubescence and hairs; thorax truncate at apex, deeply constricted laterally at about the median part, the posterior part produced laterally in a broad triangle, and one-third broader than the apex, the three dorsal sutures usually separating the prothorax and mesothorax and the scutellum are very well defined, and the part that would correspond to the scutellum bears a recurved spine, the posterior declivity is perpendicular and has a median longitudinal raised line, the disk is rugose and moderately pubescent; abdomen elongato-ovate, first segment closely punctulate, nearly sessile, sharply dentate on each side of the base, which is reddish, as broad at apex as the base of the second one, and with a fringe of not very dense, whitish hairs, apical part of the second segment with a narrow pubescent band, fifth and sixth segments with a white erect pubescence; tibiæ without spines. Length $4\frac{1}{2}$ mm.

At first I thought that the only example I got was a wingless male, but I think it is a female with strong male characters. I have not material enough to elucidate that point to my satisfaction. It will be perhaps necessary to create a genus for it.

Hab. Cape Colony (Port Elizabeth); presented by Dr. H. Brauns.

MUTILLA EVADNE.

Female.—Head and abdomen black, thorax red, antennæ and legs rufescent; head as broad as the base of the thorax, a little attenuate diagonally behind the eyes, base straight, roughly shagreened and thickly covered with a greyish pubescence; thorax subparallel, truncate at base, with the outer angle tuberculiform and the sides carinate and with four sharp teeth, the fourth one situated at the top of the declivity, which is very abrupt, the upper part is scrobiculate, slightly setulose, and very briefly pubescent; abdomen subsessile, ovoid, second segment very closely punctured, the punctures finer in the centre than at the base and on the sides and having a narrow, apical, silky white band, fourth and fifth segments covered with long, greyish white hairs; tibiæ without spines. Length $4\frac{1}{2}$ mm.

Hab. Cape Colony (Cape Town, Port Elizabeth).

MUTILLA ALTHÆA.

Female.—Head, antennæ, and legs brownish red, thorax ferruginous red, abdomen black; head very little broader than the thorax, slightly attenuate behind the eyes, which are elongato-ovate, nearly truncate at base, striolate, and having on the vertex a long, median, smooth raised line; thorax truncate at apex and at the posterior

declivity, parallel, carinate laterally, and having on each side five or six sharp tubercles, bearing each a small fascicle of hairs, it is hardly convex, covered with irregular, wavy raised lines, the declivity is perpendicular, serrulate laterally, and has on the upper part a lateral sharp spine and also a median one, the latter a little less developed than the lateral one; abdomen sub-sessile, ovate, first segment short, fringed with a narrow, silky white band, second segment very finely and densely aciculate, and having also a narrow apical fringe of white hairs, third segment entirely clothed with a white band; tibiæ with a double row of three spines; ventral carina of the first joint subaculeate at both ends. Length 5-6½ mm.

Hab. Cape Colony (Cape Town).

MUTILLA ALCIS.

Female.—Head piceous black, antennæ and legs reddish brown, thorax dark ferruginous, abdomen black; head slightly broader than the thorax at its widest part, slightly attenuate diagonally from behind the eyes to the basal angle, which is somewhat rounded, covered with deep but not closely set punctures, hardly pubescent and not very bristly; thorax sloping very diagonally at apex, the angle sharp and projecting a little, slightly ampliate from there to about one-fourth of the length, and produced from there in the shape of a truncate pyramid to the top of the declivity, which is sloping and hardly serrulate, the sides are slightly tri-dentate in the anterior part and not very distinctly serrulate from there to the top of the declivity; abdomen ovate, subsessile, second segment covered with closely set, elongated punctures, the white posterior margin slightly broader than the one on the third segment; ventral carina of the first segment truncate at tip; tibiæ spinose. Length 5 mm.

Hab. Cape Colony (Cape Town).

MUTILLA BAUCIS.

Female.—Head, antennæ, legs, sternum, and abdomen black; head as broad as the apex of the thorax, nearly twice as broad as long on the vertex, not much produced behind the eyes which are large, outer angles of base slightly rounded, deeply and closely scrobiculate, pilose, but hardly pubescent; thorax truncate at apex, outer sides sub-carinate, slightly ampliate diagonally from the outer angle to the median part, which is aculeate, and gradually narrowed from there to the top of the declivity, which is sub-truncate, and where it is one-third narrower than at apex, the anterior part has a very faint incision between the apical angle and the

median part, and the lateral ridges as well as the sides and upper margin of the declivity not serrulate; it is covered with deep, closely set, and broad round punctures, and clothed with a long black villosity; first abdominal segment moderately long, distinctly petiolate, very rugose, the apical band moderately broad, second segment covered with very long punctures, closely set, deep, and with the intervals raised and sub-undulate, band on the third segment a little narrower than that on the second, fourth segment with a small indistinct lateral patch; the pubescent bands are yellowish instead of white; the tibiæ have one sub-median spine, the tarsi are slightly rufescent; ventral carina of first segment sharp, truncate at base. Length $8\frac{1}{2}$ –9 mm.

Hab. Cape Colony (Stellenbosch, Prince Albert).

MUTILLA LATONA.

Female.—Head piceous black, with an oblong dark ferruginous red patch in the posterior part, and a smaller and elongato-quadrate one in front of the eyes, antennæ, tibiæ, and tarsi rufescent, femora piceous red, abdomen black, clothed with long, greyish villous hairs; head a little broader than the thorax, sub-quadrate, with the posterior angles slightly rounded, covered with deep, elongate, closely set punctures, the intervals of which are sub-striolate between the eyes, hardly pubescent, and not thickly pilose; thorax truncate in front, with the anterior margin hardly sinuate but carinate and distinctly serrulate, outer sides nearly straight for one-third of the length and with a not very deep incision, which, owing to the anterior angle being sharp, gives it the appearance of being tridentate, narrowed from there in the shape of a broadly truncate cone as far as the posterior declivity, which is moderately abrupt, the outer margins are distinctly serrate, and the whole of the upper part is covered with distinct, closely set foveæ; first joint of abdomen moderately long, red, and dentate laterally at base, very roughly shagreened, the apical band moderately broad and sub-cuneiform in the middle, punctures of the second segment long, narrow, and with the intervals smooth and sub-carinate, the band moderately narrow, the band on the third segment is of the same width, and occasionally rubbed off in the centre, the fourth and fifth segments have also a lateral whitish elongate patch; ventral carina of first segment sharp, truncate at apex and slightly sinuate in the middle; tibiæ with a double series of spines. Length 8– $10\frac{1}{2}$ mm.

Hab. Cape Colony (Cape Town, Stellenbosch, Worcester, Uitenhage), Transvaal (Klerksdorp).

MUTILLA AGLÆ.

Female.—Black, with the thorax red, or occasionally black and piceous red in the middle of the dorsal part; legs piceous black, abdominal bands sub-flavescent; head broader than the thorax at apex, straight laterally and not rounder in the posterior angle, roughly shagreened, densely pubescent and pilose, eyes set forward; thorax long, nearly straight at apex, narrowed gradually from the anterior angle to the perpendicular declivity, where it is narrower by one-third than at apex, deeply emarginate laterally past the median part, roughly punctured, with the intervals raised and irregularly longitudinal; it is densely pubescent and the hairs long and greyish; abdomen oblong, first joint sharply dentate at base, and nearly as broad at apex as the second joint in the middle, roughly punctured and having a moderately broad apical band, second joint very little ampliate in the middle, covered with deep, elongated, closely set punctures and fringed at apex with a narrow pubescent band, third segment clothed with a similar but broader band, apical joint also pubescent; ventral carina of first segment very small; tarsi with a double series of short spines. Length $6\frac{1}{4}$ mm.

Male.—Black, with the prothorax and mesothorax and the tegulæ reddish. Head twice as broad as long, closely punctured, pubescent; mesothorax with two median grooves reaching very short of the anterior suture, scutellum not much raised, metathorax rounded laterally behind and having a broad median groove with edges raised and smooth; abdomen similar to that of the female, but with the second joint more ampliated, a little less coarsely punctured, and with the band on the third joint much narrower; ventral carina of first segment dentate at base; tibiæ non-spinose; wings hyaline, sub-infusate at tip. Length $5\frac{3}{4}$ mm.

Hab. Cape Colony (Port Elizabeth).

Bred by Dr. H. Brauns from the nest of an undetermined species of *Ceratina*.

MUTILLA ILYTHIA.

Female.—Head, sternum, the basal joints of antennæ, and the abdomen black, the dorsal part of the thorax red, antennæ, tibiæ, and tarsi rufescent, femora piceous red; villous hairs greyish and moderately dense; head deeply and closely punctured, the punctures broad and the intervals striolate in the middle, transverse, not much rounded in the posterior angles, and if anything slightly broader than the thorax at its widest part; thorax truncate in the anterior part, which is carinate, nearly straight laterally for one-third of the

length and there feebly quadri-dentate, slightly serrulate from there to the apex, posterior declivity abrupt, not marginate at tip, upper part foveate, intervals of foveæ not carinate; abdomen pyriform, apical band of first segment subaculeate in the centre, but not reaching quite the sides, second and third bands very well defined, fourth and fifth segments with a small lateral patch, second abdominal segment punctured in the centre and feebly striolate laterally and basally in the dorsal part; tibiæ with a double series of spines. Length $7\frac{1}{2}$ mm.

Hab. Cape Colony (Cape Town).

MUTILLA CALLIRHOË.

Female.—Head black in the anterior part, posterior part dark ferruginous, upper part of thorax ferruginous red, sides and sternum black, abdomen black, tibiæ and tarsi ferruginous, femora piceous black, clothed with moderately dense black or slightly greyish hairs; head a little narrower than the thorax, with the sides behind the eyes straight and slightly rounded in the posterior angle, deeply and broadly foveate with the intervals very distinctly carinate; thorax broadest in the anterior part for about one-third of the length, where it is deeply incised laterally, and quite parallel from there to the declivity, which is quite perpendicular, the apical margin is truncate, the lateral ones carinate, and the dorsal part covered with broad and deep foveæ so arranged that the intervals form longitudinal carinæ hardly wavy and reaching from the apex to the top of the declivity, the lateral margins are hardly serrulate; the first and second abdominal segments are covered with narrow, elongate punctures, with the intervals raised and subcarinate in the latter; the whole of the first segment is clothed with a bright orange silky pubescence produced in a triangle the point of which overlaps the basal part of the second segment, the apical band of which is also produced triangularly towards the dorsal median part, without, however, reaching it; the third segment is entirely clothed with a band of the same colour, and the following segments have no trace of any such orange pubescence on the dorsal surface, but the second, third, fourth, and fifth have a distinct, uninterrupted ventral band; tibiæ with a double series of spines; ventral carina of first segment short, sharp, and truncate at both ends. Length 10 mm.

Hab. Cape Colony (Calvinia).

MUTILLA GLAUCE.

Female.—Closely allied to *M. callirhoë*; the shape of the head and thorax is similar, but owing to the intervals between the foveæ

being less raised and narrower, and also more wavy and not at all longitudinal, both seem to be less deeply and more narrowly foveate; the head has two distinct ocelli; the shape of the abdomen is similar, and so is the disposition of the silky bands, but the one on the first segment is reduced to a narrower apical fringe; tibiæ with a double row of spines; ventral carina as in the preceding species.

But for the presence of ocelli and the narrow band on the first abdominal segment, it would be difficult to distinguish from *M. electra*. Length 10 mm.

Hab. Cape Colony (Carnarvon, Port Elizabeth).

MUTILLA ELECTRA.

Female.—Anterior part of head as far as the eyes, sternum, abdomen, antennæ, and legs black, posterior part of the head, dorsal part of thorax and sides red; head and thorax similar in shape and sculpture to those of *M. glauca*, but the former has no trace of ocelli; the shape and clothing of abdomen is similar, except that the whole of the first segment is clothed with a dense orange yellow pubescence, and that the band on the second segment is produced towards the median part of the dorsal part, which it reaches; tibiæ with a double series of spines; ventral carina of the first segment truncate at both ends, and a little emarginate in the centre. Length $11\frac{1}{3}$ –12 mm.

Hab. Damaraland (Goagas).

MUTILLA CALLISTO.

Female.—Head subquadrate, subelongate behind the eyes, slightly rounded laterally and also slightly in the posterior angles, not quite as broad as the thorax, deeply and irregularly foveate, with the intervals sharp and subcarinate in the central part, piceous black with a posterior dark ferruginous red patch, the villous hairs long, nearly black; antennæ and legs black; thorax not quite straight transversely at apex, not quite parallel laterally from the apical angle to about one-fourth of the length, suddenly narrowed there and almost parallel as far as the posterior declivity, but with two faint sinuations hardly acute at angles, the outer margins are not serrulate, but it is covered with deep, broad foveæ with sharply raised intervals, the villous hairs are dense and black; abdomen subsessile, first segment with a distinct lateral basal spine, roughly shagreened, band narrow and slightly yellow, second segment covered with long, deep punctures with narrow, sublinear, raised intervals, apical band narrow and aculate in the middle for a short

distance, the band on the third segment is a little wider than the one preceding, and interrupted in the middle for about one-third of the distance from side to side, the other joints are without any trace of lateral yellowish white pubescence; tibiæ with a double series of spines; ventral carina of first abdominal segment short, not prominent, sub-truncate at base. Length 12 mm.

Hab. Cape Colony (Worcester, Port Elizabeth).

MUTILLA TECMESSA.

Female.—Nearly similar in shape and structure to *M. callisto*, but the head is broader than the base of the thorax; upper part of the head and thorax bright red instead of black ferruginous red, the foveæ, however, are a little broader, the abdominal bands are bright orange, and the one on the second segment a little broader and more triangular in the middle. Length 11–13½ mm.

Male.—Head quadrate, with the posterior angles sharp, twice as wide as long on the vertex, shagreened, pubescent, black; eyes slightly emarginate; thorax black, with the prothorax and mesothorax and also the scutellum red, tegulæ red, upper part very rough and with two very distinct longitudinal median grooves; metathorax a little attenuate and rounded laterally behind; abdomen subsessile, black with a faint, dark cyaneous tinge, closely but not deeply punctured on the dorsal part, bands of the same colour as those of the female, and similarly disposed; ventral carina of first joint sharp and sloping at both ends; tibiæ non-spinose; wings subhyaline at base, slightly infuscate from there to the apex, anterior margin of fore wings more deeply infuscate at equal distances from base and apex. Length 11½ mm.

Hab. Cape Colony (Clanwilliam), both sexes; Port Elizabeth, male and female.

Although not actually captured *in coïtū*, I think there is little doubt that the two sexes here described are the same species.

MUTILLA HELLE.

Female.—Discoidal part of the head and upper part of thorax ferruginous red; antennæ, legs, and abdomen black; head very broad, nearly as wide as the second abdominal segment at its widest, amplified behind the eyes, which are small and ovate, closely but not deeply punctured, hairs moderately dense and black, mandibles long, falciform, widely bifid at tip and with a sharp, erect process on the upper margin; thorax truncate at apex and with the apical angles very short, narrowed diagonally laterally from the anterior angle to one-fourth of the length, bisinuate from there to the posterior angle, the median

interval between the sinuations serrulate, the posterior part with three distinct teeth, sides of the declivity which is quite perpendicular, also serrate, upper part deeply and closely foveolate; abdomen sessile, posterior part of first segment transverse, sides straight, segments rugulose, densely hairy and pubescent; the yellowish bands on the first and second segments are narrow, and that on the third segment broader by one-half; tibiæ with a double row of spines; ventral carina of the first segment short, but projecting and truncate at tip, second segment broadly scooped from side to side and with a short, median longitudinal ridge in the apical part. Length 16½–17 mm.

Male.—Black, with the mesothorax and scutellum red, tegulæ red; abdomen with a cyaneous tinge; head twice as broad as long on the vertex, eyes slightly emarginate; mesothorax with two indistinct longitudinal grooves, metathorax quadrangular; abdomen sessile, finely punctured, bands as in the female; tibiæ spinose; ventral carina of first segment produced in a long, bifid process, second segment scooped and with a sharp median tooth at the apical margin; wings hyaline at base, fuscous brown at apex, anterior margin of fore wings deeper brown at about the median part. Length 14 mm.

Hab. Cape Colony (Cape Division, Port Elizabeth).

I found one male and two females drowned in a pool of water on the floor of a dried watercourse.

MUTILLA BERENICE.

Female.—Head, antennæ, abdomen, and legs black; body covered with very long greyish hairs; abdominal bands yellow; head scrobiculate and striolate in the middle, clothed with a very brief, silky flavescent patch, not quite as broad as the thorax at apex and with the posterior angles much rounded; thorax truncate in front, quadrate in the anterior part for about one-fourth of the length, slightly sinuate but subparallel from there to the posterior declivity which is quite perpendicular, dorsal part deeply foveate with the foveæ broad and the intervals sub-carinate, lateral margins hardly serrulate except in the posterior declivity where it is more noticeable; abdomen sub-sessile, ovate, first segment with a lateral spine on each side, roughly punctured, the yellow silky band broad and triangular, second segment covered with very long, narrow punctures with sub-carinate intervals, the apical band narrow but reduced to a mere line in the central part, band on the third joint narrow but of the same width throughout, the other three apical joints with a lateral white pubescence; tibiæ with a double series of spines. Length 10–11 mm.

Hab. Cape Colony (Beaufort West).

MUTILLA PURPURATA, Smith,
New Species of Hymenoptera, p. 190.

Female.—Head black, with a transverse ferruginous patch extending along the base and cheeks, thorax red, abdomen black, legs black or piceous, antennæ black, with the scape rufescent; head very closely punctured, sub-striolate on the vertex, a little broader than the apex of the thorax and equal in width to the basal part, vertical part short behind the eyes, posterior outer angles slightly rounded; thorax produced diagonally backward at apex, sinuate laterally from a short distance of the anterior angle to about two-thirds of the length, and with the apical part of the sinuation sharp, sub-dentate, broadening gradually from the end of the lateral sinuation to the apical declivity, where it is about one-fourth broader than at apex, and rounded at the declivity, which is quite perpendicular; it is covered with closely set, not very deep foveæ, the intervals of which are raised in the posterior part and on the declivity in the shape of very small tubercles; hairs on head and thorax short, blackish; abdomen sub-sessile, first joint with a lateral spine at base, clothed with long dense greyish white hairs; apical band silky white, narrow, second segment covered with short and smooth closely set, raised lines, apical band not broad, and interrupted in the centre in the shape of a V, band on the third segment entire and slightly wider than the preceding one, sixth joint clothed with white pubescent hairs; tibiæ with a double row of spines; ventral carina of first segment truncate at apex and incised in the centre. Length $7\frac{1}{2}$ –10 mm.

Hab. Cape Colony (Cape Town, Stellenbosch, Port Elizabeth), Natal (teste Smith).

Captured *in copulâ* by Dr. Brauns.

MUTILLA ANTIOPE.

Female.—Head, antennæ, thorax, first abdominal joint, and legs ferruginous red, dorsal part of abdomen deeply infusate, abdominal part rufescent; head and thorax finely shagreened, very briefly pubescent and hardly pilose, the first-named part quadrate, much produced behind the eyes, very little rounded laterally in the posterior part, broader than the apical part of the thorax but equal in width to the base; thorax truncate at base, parallel laterally for one-half of the length, gradually amplified from there to the angle of the posterior declivity, where it is broader than the apex by nearly one-fourth, declivity perpendicular with the upper margin distinctly denticulate, and the sides serrulate, lateral margins of thorax a little indented at

about one-third of the length and a little past the median part; abdomen sessile, very ovate, basal joint spinose laterally at base, finely aciculate like the other segments, and having a median whitish yellow patch extending on about one-half of the width, second segment also with a central patch incised in the middle in a V shape, band on the third segment narrow, non-interrupted; ventral carina of first segment short, deeply incised in the centre, and sharp at both ends; tibiæ with a single row of spines. Length 7-8 mm.

Hab. Cape Colony (Cradock, Hopetown), Bechuanaland (Moroquen).

MUTILLA TAYGETE.

Female.—Head and abdomen black; thorax, tibiæ, and tarsi brick-red; femora piceous black; head nearly quadrate, but with the basal part slightly rounded laterally, briefly pubescent, rugose, and as broad as the thorax; thorax with the apical part slightly sloping, gradually but very little narrowed laterally as far as the posterior declivity and slightly emarginate towards the median part, each end of the emargination hardly tuberculate; it is not more than one-fifth narrower at the declivity than at the apex, which is the widest part, and the declivity is not very abrupt and the sides are not serrulate; it is covered with small, deep foveæ; the abdomen is sub-sessile, the first segment has a moderately broad band of white silky hairs deeply emarginate, crescent shape, in the middle of the posterior part, the second segment is deeply punctured, with the punctures elongate, and has a band of white hairs somewhat narrow, and of the same width as the one on the third and fourth, the fifth and sixth are clothed with a greyish pubescence, which is not dense enough to form a band; ventral carina of the first segment hardly noticeable; tibiæ without spines. Length 5 mm.

Hab. Cape Colony (Oudtshoorn).

MUTILLA MELETE.

Female.—Head, antennæ, thorax, and legs pale-red; dorsal part of first and second segments black, the others sub-rufescent; ventral part reddish, the whole body clothed with slightly flavescent villous hairs; head prolonged behind the eyes, sub-quadrate, as broad as the apex of the thorax, shagreened and very briefly pubescent; thorax truncate at base with the angle sharp, slightly amplified sub-diagonally for about one-third of the length laterally, apical part of the ampliation distinct, sub-tuberculate, gradually narrowed from there to the declivity where it is about one-fourth narrower than at its widest part, declivity perpendicular, margins not serrulate,

dorsal part sub-foveolate, declivity foveolate; abdomen sessile, pyriform, second segment aciculate in the basal and very finely striolate in the apical part, bands silky white with a faint tinge of yellow, and, with the exception of the one on the first segment, of equal width; tibiæ without spines; ventral carina short, incised in the middle. Length $7\frac{1}{2}$ mm.

Hab. Cape Colony (Beaufort West).

MUTILLA ARIADNA.

Female.—Head, antennæ, with the exception of the two first joints which are rufescent, and abdomen black; thorax and legs red, body clothed with a greyish pubescence; head slightly broader than the apex of the thorax, and very rugose, sub-quadrate, eyes very large, space between the hind part of the eyes and the basal angle very short; apical part of thorax slightly sloping on each side, the angle sharp but not projecting, outer sides nearly straight, not incised, margin hardly serrulate, basal part a little broader than the apical one, posterior declivity perpendicular, serrulate on the upper part and also laterally; abdomen pyriform, second segment covered with closely set, short striolæ, apical part of the four intermediate segments with an uninterrupted band of silky white hairs, wanting on the basal segment; ventral carina of the first segment, short, sharp, incised in the centre; tibiæ spinose. Length 4 mm.

The shape of the thorax and abdomen is similar to that of *M. speculatrix*, but it is easily distinguished by the abdominal white bands.

Hab. Zambesia (Umfu River).

MUTILLA CASSIOPE.

Female.—Head, thorax, and tibiæ ferruginous red, abdomen black, femora and scape of antennæ piceous; the whole body is covered with black and greyish hairs; head narrower than the thorax, long behind the eyes with the sides a little amplified and the posterior angles rounded, very rugose and clothed with a brief flavescent pubescence; thorax sub-arcuate at apex with the margin carinate, amplified diagonally laterally from the apex to a little short of the median part where it is distinctly projecting in a triangular blunt tubercle, narrowed gradually from there to the declivity where it is only one-half the width of the apex; declivity truncate and serrate laterally, dorsal part covered with moderately broad but deep confluent punctures; abdomen ovate, first and second basal joints covered with closely set, narrow, elongate punctures; the

bands pale-yellow, that on the first segment broad, the apical one on the second joint slightly triangular in the centre, third, fourth, and fifth joints entirely clothed, apical part of the sixth denuded; tibiæ with a double series of spines; ventral carina moderately long and slightly bi-incised. Length 10 mm.

Hab. Cape Colony (Bushmanland).

MUTILLA OMPHALE.

Female.—Head black, and vertex ferruginous, thorax ferruginous red, abdomen, antennæ, and legs black, basal joint of antennæ piceous red, body clothed with black and flavescent hairs, abdominal bands and median patch golden-yellow; head as broad as the thorax, truncate behind, roughly shagreened in the anterior part, striolate behind; thorax long, subparallel, the apical part sloping on each side, outer sides slightly bisinuate with the median part sub-aculeate, basal part very slightly broader than the apical one, declivity perpendicular, dorsal part covered with deep, elongate, narrow foveæ, with wavy, sub-carinate intervals; abdomen not quite sub-petiolate, pyriform, segments finely shagreened, second one covered with closely set, sub-elongate punctures, apical part of basal segment fringed with yellow hairs, median dorsal patch on second segment narrow, elongato-ovate, beginning close to the base and reaching short of the middle, apical bands of second and third segments nearly equal in width; ventral carina curved, dentiform at apex; all five apical segments fringed underneath with a yellowish pubescence; tibiæ spinose. Length 12 mm.

Hab. Natal (Malvern).

MUTILLA THYONE.

Female.—Black, with the thorax red for two-thirds of the length, base of antennæ and legs piceous; head aciculate, as broad as the thorax, eyes moderately large, head slightly narrowed diagonally behind; thorax truncate at apex with the angles somewhat sharp, nearly straight laterally but a little narrower at base than at apex, declivous behind, closely punctured, the punctures on the declivity broader and deeper than on the disk, outer margins subcarinate, neither dentate nor serrulate; abdomen subsessile, oblong, owing to the second segment not being ampliate in the middle, finely aciculate, second segment with a small, ovate median patch situated close to the base and having a moderately broad fringe of silky white pubescence, apical joint also slightly pubescent; ventral carina of first segment slightly bidentate; tibiæ without spines. Length $6\frac{1}{4}$ mm.

Male.—Black, with a faint bluish tinge on the abdomen, prothorax and mesothorax, tegulæ and scutellum ferruginous red; wings infusate, subhyaline at base; head as broad as the thorax, narrow, posterior angles not very sharp, deeply aciculate, very pubescent, mesothorax without any apparent longitudinal groove, scutellum slightly grooved longitudinally in the middle; abdomen subpyriform, acutely dented on each side of the base, finely and closely punctured with the intervals smooth, apical part of the first and second segments narrowly fringed with a white pubescence; ventral carina of first segment truncate and sharp at both ends; tibiæ without spines.

Hab. Cape Colony (Port Elizabeth).

Bred by Dr. H. Brauns, from the cocoons of a Clythrid beetle found in the nest of an ant, *Cremastogaster peringueyi*, Emery. Dr. Brauns writes that the two sexes he submitted to me were not bred out of cocoons from the same nest, but that there can be no doubt as to the identity of the two sexes.

MUTILLA LEDA.

Female.—Head, antennæ, thorax, and legs brick-red and clothed with a very dense flavescent pubescence, turning sometimes to silvery white, abdomen black, patch and bands flavescent or white; head as broad as the thorax, with the eyes large, and the space behind the eyes very small and rounded, rugose, but the rugosity concealed by a thick pubescence; thorax truncate at apex, gradually tapering from there to the posterior declivity where it is narrower by one-third, outer sides nearly straight but a little emarginate in the anterior part, and each end of the emargination slightly tuberculate, declivity nearly perpendicular, disk coarsely punctured and very pubescent, upper margin of the declivity with a median, moderately conspicuous tubercle; abdomen subsessile, or rather slightly pedunculate, ovate, second joint covered with elongate punctures with raised intervals, fringed with an apical narrow pubescent white or sub-flavescent band, and having an elongato-quadrate patch in the middle of the base connected with the apical band of the first segment, the third joint is clothed with a pubescent band, and the fourth and fifth have also a short, lateral band of a similar pubescence; tibiæ with a double series of spines. Length 4–7 mm.

Hab. Cape Colony (Cape Town, Worcester, Prince Albert).

MUTILLA ANNA.

Female.—Head, antennæ, thorax, tibiæ, and tarsi rufescent, abdomen black, with flavescent band and spot, head and thorax

covered with a dense decumbent flavescent pubescence; head very rugose, rounded laterally behind the eyes which are large; thorax truncate at tip, gradually amplified laterally to about the median part and gradually narrowed from there to the declivity which is sloping, outer margins bi-incised, and sub-tuberculate at the upper angle of the declivity, the upper margin of which is serrulate and has a small but distinct tubercle in the middle and is preceded by a transverse, narrow, not well-defined groove, disk covered with irregular, deep, confluent punctures; abdomen sub-petiolate, basal segment short, nodose, and with a tooth on each side, second segment striolate, median patch basal, connected with the apical band on the first segment, parallel or nearly so, and reaching about one-third of the length, the band on the apical part and also that of the third segment are broadly interrupted on each side of the central part, forming thus three patches; the four intermediate segments have a ventral fringe of flavescent hairs, ventral carina of first segment truncate at both ends. Length 9 mm.

Hab. Cape Colony (Worcester).

MUTILLA CETO.

Female.—Black, with the thorax red, spot and bands of abdomen slightly flavescent, head and thorax covered with a dense flavescent pubescence; head closely punctured, as broad as the thorax, eyes large, space behind the eyes short, straight; thorax moderately long, parallel, outer margins hardly sinuate, posterior declivity perpendicular, disk and declivity covered with deep, closely set, large punctures; abdomen sub-sessile, deeply and closely punctured, basal joint hairy but without any pubescent fringe, second one with a basal, ovate patch touching the apical margin, and an apical, pubescent band slightly dilated in the centre, third segment clothed with a similar band; ventral carina long, bi-sinuate; tibiae with a double series of spines. Length 4–5 mm.

Hab. Cape Colony (Port Elizabeth); presented by Dr. Brauns.

MUTILLA IRIS.

Female.—Head, antennæ, thorax, and legs red, clothed with moderately dense hairs, abdominal bands and spot silky white; head roughly shagreened, very briefly pubescent, eyes large, head as broad as the thorax, projecting little behind the eyes, posterior angles not much rounded; thorax long, slender, sloping on each side at apex, gradually attenuate from the apical outer angle to the base where it is narrower than at the apex by nearly one-third,

outer sides nearly straight from a short distance from the apical angle, carinate, not sinuate nor dentate, declivity abrupt, upper part covered with deep, closely set punctures; abdomen sub-sessile, second segment covered with small, elongate punctures, median patch ovate and equidistant from base and apex, bands on the first and second segments narrow, that on the third segment covering it entirely; ventral carina of the first segment bi-incised, truncate and sharp at apex, the four intermediate segments piceous red underneath, narrowly fringed with whitish hairs; tibiæ with a few short spines difficult to detect. Length $5\frac{1}{4}$ mm.

Hab. Natal (Malvern).

Resembles *M. prædatrix*, Sm., but differs in the colour of the head and thorax, which are respectively black and dark ferruginous in *prædatrix*; the thorax is more attenuated behind and less coarsely punctured, the abdomen is more ovate, and the spines on the tibiæ are hardly discernible instead of being very conspicuous.

MUTILLA MELPOMENE.

Female.—Black, with the thorax red, bands and spot of abdomen silvery white; head as broad as the apical part of the thorax, very deeply pitted, slightly pubescent, eyes large, space behind the eyes small, base straight or nearly so; thorax very slightly sloping on each side at apex, gradually amplified from there to the base, where it is one-fourth wider with the outer sides slightly emarginate at about the median part, posterior declivity perpendicular, disc sub-alveolate with the intervals forming two series of very short tubercles above the declivity, the outer margins of which are serrulate; abdomen sub-sessile, nearly pyriform, second segment covered with slightly wavy and interrupted raised lines, basal joint with an apical fringe of white pubescent hairs, second one with a median sub-elongate white patch equidistant from base and apex, third and fourth segment clothed with a pubescent band; ventral carina of first segment truncate and sharp at both ends, and slightly sinuate in the middle; tibiæ spinose. Length $6\frac{1}{2}$ mm.

Hab. Cape Colony (Port Elizabeth); presented by Dr. Brauns.

MUTILLA ALCYONE.

Female.—Head, antennæ, legs, and abdomen black, dorsal part of thorax dark ferruginous, head and thorax clothed with a very brief, sub-flavescent pubescence, body with black and white hairs; head quadrate with the posterior angles sharp, as broad as the base of the thorax, irregularly foveate; thorax sloping much on each side at apex, nearly straight laterally, but slightly emarginate for half the

length, nearly abruptly truncate behind, with the sides as well as the upper margin of the declivity serrate, the latter with a median truncate flattened tubercle; the disk is covered with irregular foveæ with raised intervals which form a transverse wavy ridge above the margin of the declivity; abdomen subsessile, basal joint with an apical whitish patch, second one closely striolate, and having exactly in the centre an ovate patch, third and fourth segments clothed with a white band; ventral carina truncate and sharp at both ends, intermediate segments fringed with white; tibiæ spinose. Length $10\frac{1}{2}$ –11 mm.

Hab. Cape Colony (Cape Town, Stellenbosch, Worcester, Griqualand West).

I suspect this species to be the female of *M. exaltata*, Sm.

MUTILLA HECUBA.

Female.—Head, antennæ, femora, and abdomen black, the antennal tubercles, a transverse posterior band on the head, and the tibiæ rufescent, thorax red, body with long black hairs; head and thorax clothed with a very short, sub-flavescent pubescence; abdominal bands and spot slightly flavescent; head as broad as the thorax, quadrate with the posterior angles sharp and the base slightly arcuate, very rugose and with some sub-carinate intervals in the central part; thorax nearly parallel, but slightly incised laterally in the anterior part, not sinuate, as broad at base as at apex, apical part very slightly sloping on each side, declivity perpendicular, disk covered with deep, moderately broad punctures, declivity also broadly punctured, serrulate on the upper margin, which has also a median truncate tubercle; abdomen subsessile, shagreened, second segment covered with dense, closely set, elongate punctures, apical band on the first segment indistinct in some examples, the median patch on the second is ovate and equidistant from base or apex, and there is besides on each side of it a triangular patch of slightly flavescent hairs, the apex of which nearly coalesces with the median part, and which consists of scattered hairs not dense enough to form a macule, the apical part of the segment has no band, but the third and fourth have a broad one; the ventral carina is a little emarginate, the four intermediate segments are thickly fringed with silky white hairs, and the tibiæ are spinose. Length $8\frac{1}{2}$ – $8\frac{3}{4}$ mm.

Hab. Cape Colony (? Worcester, Port Elizabeth).

MUTILLA CIRCE.

Female.—Black, with the anterior part of the thorax pale orange-yellow, antennæ rufescent, tibiæ and tarsi also rufescent, femora

piceous black except at base, the two dorsal spots on the second abdominal segment pale orange-yellow, the band on the third one silvery white; head not broader than the apical part of the thorax, rounded laterally behind, eyes very large and convex, space between the apex of the eye and the base very small; thorax sloping on each side at apex, long, slender, gradually narrowed from apex to base and not emarginate laterally, base narrower than the apex by one-third, declivity very sloping, disk covered with broad, moderately deep foveæ deeper and broader in the posterior part; abdomen nearly sub-pedunculate, first segment sharply dentate laterally at base, second covered with deep, broad, ovate punctures and having in the centre, but a little nearer to the base than to the apex, two sub-triangular yellow patches set close to one another, third segment clothed with a silvery white band; ventral carina of first segment small, feebly bi-dentate, ventral part sub-rufescent; tibiæ with a double row of short spines. Length $6\frac{1}{2}$ mm.

Hab. Cape Colony (Mossel Bay).

MUTILLA THEMIS.

Female.—Black, with the dorsal and lateral part of thorax red; head narrow, long, scrobiculate with the intervals carinate and undulating, as broad as the thorax at apex, posterior angles a little rounded, eyes large, very convex; it is clothed with a sparse, whitish pubescence and moderately dense, long black hairs; thorax elongate, narrow, truncate at apex, deeply incised laterally in the median part with the angles of the incision dentate, declivity sloping, the whole of the dorsal part covered with deep scrobes, the intervals of which form longitudinal, wavy carinæ reaching from apex to base; abdomen sub-sessile, sub-pyriform, second segment striate irregularly, basal joint short and without any band or spot, second joint with two sub-ovate white patches, not quite in the middle, but equidistant from the centre of the disk and the outer margin, third segment with a broad white band, broadly interrupted in the centre, apical segment with white pubescent hairs; ventral carina short, acute, truncate at both ends and with three indistinct serrations; tibiæ with two spines. Length 15 mm.

Resembles very much *M. sycorax*, and might be easily mistaken for it; the abdomen however is more pyriform, the mesonotum is black, the ventral carina of the first joint is not sharply dentate, and the ridge on the ventral part of the second joint does not end in a tooth; the punctures on the second segment are much more elongate and the intervals much raised and sub-linear.

Male.—Black, clothed with grey and black hairs and with white

abdominal patches; head shagreened, anterior and posterior part clothed with dense, greyish white hairs; prothorax also clothed with greyish hairs, mesothorax with five longitudinal grooves, scutellum produced in a thick, short triangle, metathorax with a broad median groove, carinate on each side and reaching to about half the length, and a supra-lateral, sub-diagonal carina coalescing at about midway with the outer margin, which is also very sharp; abdomen sessile, first joint not banded, second one covered with a white patch, leaving a diamond-shaped space denuded in the centre, the other joints, except the apical one, have a lateral, apical band; underneath the five ultimate joints have a lateral fringe of sparse, greyish hairs, and the ventral carina of the first joint is short, truncate at both ends, and not incised; wings sub-violaceous. The prothorax and mesothorax are deeply and closely punctured, and the metathorax closely foveate, the scutellum is thickly fringed with long, greyish hairs; the abdominal segments have shallow, spaced punctures. Length 13–15½ mm.

As closely allied to *M. medon*, Sm., as the female is to *M. sycorax*. Both sexes have been sent to the museum by Colonel J. H. Bowker as having been caught in copulâ. I have some doubts, however, as to the identity of both sexes, because they are so differently marked. In *M. sycorax* (? *guineensis*) the two sexes, which I have several times bred from the mud nests of *Pelopæus spirifex*, have similar markings. It is very singular that the female, which is so closely allied to *M. sycorax* that it is difficult to distinguish the two, should differ so much from the male.

Hab. Natal (D'Urban, Frere, Estcourt); Transvaal (Boksburg), Zambesia (Salisbury).

MUTILLA PERSEPHONE.

Female.—Black, with the thorax ferruginous red, spots and bands on the abdomen silvery white; head shagreened, briefly pubescent, slightly narrowed diagonally laterally behind the eyes, which are large and very convex, the base is slightly emarginate; it is slightly wider than the thorax, which is moderately long, parallel and slightly denticulate laterally past the median part, posterior declivity perpendicular, serrulate laterally, dorsal part scrobiculate, the intervals are sub-linear in the median part; abdomen sub-sessile, elongato-ovate, second segment punctulate and having two somewhat rounded supra-lateral white patches situated in the median part, but a little nearer to the apical than to the basal part, third segment clothed with a white band broadly interrupted in the centre, apical joint covered also with a dense white pubescence; ventral carina of first

segment bi-dentate in the centre, the five abdominal segments thickly fringed with greyish hairs underneath; tibiæ with a double series of distant spines. Length 7–11 mm.

Hab. Cape Colony (Seymour), Zambesia (Umfuli River), Natal (Malvern).

MUTILLA CALYPSO.

Female.—Black, with the whole thorax bright red, spots and bands of abdomen white; head slightly attenuate behind, and very little wider than the thorax, clothed with a dense flavescent pubescence, and deeply and closely punctured, eyes large; thorax short, slightly sloping on each side at apex, straight laterally and slightly denticulate near the base, deeply foveate, abruptly truncate and with two or three transverse series of short tubercles along the base produced by the sharp intervals of the foveæ; abdomen sub-sessile, sub-pyriform, second joint finely striolate and having two lateral ovate patches placed nearer to the apex than to the base, third joint clothed with a band of white hairs broadly interrupted in the centre, fourth joint also clothed with a similar band which is, however, much less dense, but this may be accidental; ventral carina of first joint tri-incised; tibiæ with a few rudimentary spines. Length 5 mm.

Hab. Cape Colony (exact locality unknown).

MUTILLA PENELOPE.

Female.—Black, with the dorsal part of the thorax dark ferruginous; abdominal spots and bands silvery white; head rounded laterally behind, with the eyes large and the space between the eye and the base small; it is closely foveate, very briefly pubescent and not broader than the prothorax; the latter is elongate, narrow, very sloping on each side at base, dilated triangularly laterally in the anterior part, sub-parallel from there, but slightly emarginate, deeply and irregularly foveate with the intervals of the foveæ conical on the outer sides as well as at the base, declivity slightly sloping and with six distinct, slightly undulating carinæ; abdomen sub-sessile and sub-pyriform, second segment covered with deep, very elongate punctures, the intervals of which form very distinct raised lines in the centre of the discoidal part, and having two ovate sub-median whitish patches a little nearer to the apex than to the base, third and fourth segments clothed with a white band broadly interrupted in the centre, apical segment clothed with greyish white hairs; ventral carina of first segment tri-dentate; tibiæ with a single series of spines. Length $9\frac{1}{2}$ mm.

Hab. Zambesia (Hartley).

Resembles very much *M. persephone*, but the sculpture of the thorax and abdomen is much more pronounced, and in *M. persephone* the third abdominal segment only bears a white band.

MUTILLA THYAS.

Female.—Black, thorax bright red, spots on the abdomen silvery white; head very rugose and clothed with a brief, greyish pubescence and a few short black hairs, nearly as broad as the apical part of the thorax, a little rounded laterally behind, eyes long, sub-emarginate; thorax truncate at apex, straight laterally for one-fourth of the length, a little narrowed but parallel for half the length, and broadening for the remaining fourth but still straight laterally and with the base one-fourth wider than the apex, declivity quite perpendicular, whole surface covered with deep, elongate, narrow and closely set foveæ, basal part with a distinct transverse sulcus above the upper margin of the declivity; abdomen sessile, pyriform, segments finely shagreened, second one with two round patches placed nearer to the base than to the apex, third and fourth with two sub-quadrate patches in a line with those on the second segment, apical part of the ultimate segment fringed with thick, long, white hairs; ventral carina of the first segment short, bi-dentate, intermediate segments fringed with greyish hairs underneath, the second one has a short, lateral, silky band along the outer margin; tibiæ with a double series of spines. Length 19 mm.

Hab. Transvaal (Potchefstroom).

MUTILLA INO.

Female.—Size and facies of *M. æstuans*, but the head is broader and the thorax less amplified behind; head quadrate, much broader than the thorax, base straight, eyes set forward, frontal tubercles very sharp; it is shagreened and faintly striolate in the posterior part, black, briefly pubescent, pilose, the scape and also the two basal joints of the antennæ are reddish; thorax truncate and of equal width at both ends, very slightly sinuate laterally with the outer margins sub-serrulate at the upper part of the posterior declivity, which is perpendicular, and closely denticulate, and the discoidal part is covered with rough, confluent punctures; abdomen pyriform, second segment closely and finely punctured and having two median whitish patches equidistant from outer sides and apical and basal margins, third segment clothed with a band of white pubescence, apical segment also pubescent; ventral carina of first segment aculeate at tip; tibiæ with a double series of spines. Length 8 mm.

Hab. Natal (Estcourt, D'Urban).

Closely allied to *M. perse*, but the third segment only is banded with white, and the two patches on the second one are of different shape and size.

MUTILLA ACRISIONE.

Female.—Black, thorax ferruginous red, spots and bands on the dorsal part of the abdomen sub-flavescent; head scrobiculate, hardly pubescent, broader than the thorax, rounded laterally behind, eyes large; thorax not much broader at base than at apex, but with the median lateral part emarginate, apical part sub-arcuate with the anterior angles sharp, deeply scrobiculate with the intervals longitudinally carinate in the median part, but wavy, lateral margins sub-serrate, declivity sloping; abdomen sub-sessile, second segment covered with deep, closely set, elongate punctures, and having two supra-lateral, rounded, flavescent patches situated at the same distance from base and apex, third and fourth segments clothed with a band of sub-flavescent hairs; ventral carina of the first segment trifid; tibiæ with a double series of spines. Length 9 mm.

Hab. Cape Colony (Cape Town, Stellenbosch).

MUTILLA NIOBE.

Female.—Black, with the upper part of the thorax red, antennæ, tibiæ, and tarsi sub-rufescent, femora piceous black, spots and bands on the abdomen silvery white; head very broad, quadrate, with the base sub-arcuate, twice as broad as the thorax, eyes moderate, set forward, very closely and finely punctured and hardly pubescent; thorax short, truncate at apex, parallel laterally and not emarginate, perpendicularly declivous behind and covered with moderately broad and closely set punctures, outer margins of the declivity sub-serrulate; abdomen sub-sessile, pyriform, second segment closely punctured and having two small supra-lateral, transverse patches, third, fourth, and fifth segments clothed with a band of white hairs; ventral carina of first segment truncate and sub-aculeate behind; tibiæ with a double series of spines. Length $7\frac{1}{2}$ mm.

Hab. Cape Colony (Cape Town).

MUTILLA BELLONA.

Female.—Black, with the anterior part of the thorax dark ferruginous in the middle of the disk; abdominal bands and spots slightly flavescent; head very broad, posterior angles a little rounded, eyes set much forward, twice as broad as the median part of the thorax, closely striolate and briefly pubescent; thorax slightly arcuate at base with the angle sharp and with a short lateral spine curving slightly backwards, outer sides deeply emarginate, base not much

narrower than the apex without the lateral projection, declivity perpendicular, disk closely foveolate, sides of the declivity serrulate; abdomen sub-sessile, second segment covered with closely set, fine, elongated punctures and having two transverse sub-flavescent patches, each of which is placed at an equal distance from the side and the median part, third and fourth segments clothed with a white band, apical segment fringed at apex with greyish white hairs; ventral carina sub-aculeate at both ends; tibiæ with a double series of spines. Length $9\frac{1}{2}$ mm.

Hab. Cape Colony (Worcester District).

MUTILLA PASYPHÆ.

Female.—Closely allied to *M. bellona*; the head, however, is much broader, with the base deeply sinuate and covered with very closely set, fine punctures, and the eyes are set forward, the antennæ are rufescent, and the antennal tubercles are sharper and longer; the thorax is sharply angular at apex, sub-parallel, and a little attenuate towards the base instead of being nearly straight, and it is not so broadly and deeply pitted; the abdomen is more pyriform, and the spots on the second segment and the bands on the third and fourth are similar in shape and colour, but the punctures on the second segment are much finer and closer; tibiæ also with a double series of spines. Length 9 mm.

Hab. Cape Colony (Stellenbosch, Uitenhage).

The sculpture and also the shape of the head approximates much this species with *M. bellona*, but the shape of the thorax is very different.

MUTILLA PERSE.

Female.—Anterior part of the head and abdomen black, posterior part of the head and dorsal part of the thorax ferruginous red, antennæ, tibiæ, and tarsi sub-rufescent, femora piceous black, abdominal spots and bands white; head large, quadrate, base straight, eyes large, set forward, finely shagreened, striolate behind, densely pubescent, and one-third broader than the thorax, which is parallel laterally, not emarginate, and truncate at apex and base, declivity perpendicular, with the outer margins serrulate, disk closely sub-foveate; abdomen sub-pyriform, second segment aciculate and having two transverse patches in the median part, separated by a narrow interval and extending to the outer side of the disk; third, fourth, and fifth abdominal segments clothed with a silky white band; carina of the basal segment short, truncate, and sub-aculeate at base; tibiæ with a double series of spines. Length 8 mm

Hab. Cape Colony (Prince Albert).

MUTILLA ANDROMEDA.

Female.—Black, with the upper part of the thorax ferruginous red; abdominal maculæ and band white, but occasionally orange-yellow or sub-flavescent; head as broad as the thorax, rounded laterally behind, eyes small, leaving much space behind, deeply scrobiculate on the vertex, clothed with a thin, sub-flavescent pubescence and set with long black hairs; thorax nearly straight at apex, incised at about one-fourth of the length, narrower from there to the base and nearly parallel but sub-tuberculate at some distance from the posterior declivity, which is abrupt and serrulate all round, the disk is covered with irregular, deep foveæ with sharp intervals; abdomen ovate, sub-sessile, second segment striolate, the basal one with a median, triangular patch, second one with an ovate spot on each side placed at an equal distance from the sides and the median part, central apical part with a small, sub-quadrate spot, third segment entirely covered by a broad band; ventral carina short, truncate and aculeate at apex, second segment with a moderately deep impression, the base divided by a raised line on each side of the base underneath, intermediate joints fringed with greyish hairs; tibiæ with a double series of spines. Length 9–15 mm.

Hab. Cape Colony (Cape Town, Worcester, Calvinia).

In the example from Calvinia the thorax is redder than in the typical form, and the abdominal spots and band rich orange-yellow.

MUTILLA ARSINOË.

Female.—Black, with the thorax red.

The description of *M. andromeda* might serve for this species, but apart from the colour of the thorax, which is totally red instead of being ferruginous in the dorsal part only, the thorax is narrower and longer; the intervals of the foveæ are more longitudinal, those on the hind part are raised in the shape of small conical tubercles, and the edge of the declivity is denticulate; the abdomen is more elongato-ovate, the second segment more deeply striolate, and with the intervals more raised. Length 11 mm.

Hab. Transvaal (Klerksdorp).

MUTILLA HECATE.

Female.—Black, with the thorax ferruginous red; head scrobiculate, clothed with a very brief, whitish pubescence, very abundant on the basal joint of antennæ, as broad as the thorax, rounded

laterally behind, eyes large, mandibles bifid at tip; thorax incised laterally at a short distance from the apex, which is nearly straight, narrower and parallel from there to the declivity, which is perpendicular and has nine sharp teeth on the upper margin, disk with seven longitudinal but wavy ridges in the median part and two lateral series of scrobiculations on each side; abdomen sub-sessile, first segment with a small median white patch, second one covered with elongated, longitudinal raised lines, and having two supra-lateral, ovate white patches and a small, apical, median one; third segment clothed with a white band; tibiæ with a double series of spines. Length 14 mm.

Very closely allied to *M. arsinœ*; differs by the sculpture of the thorax, the dorsal part of which is covered with much more distinct and less undulating carinæ, the upper margin of the declivity is also more distinctly dentate; but the two species may prove to be one. I have seen only one example of each.

Hab. Zambesia (Umfuli River).

MUTILLA ARTEMIS.

Female.—Black, with the dorsal part of thorax ferruginous; head as broad as the thorax, eyes moderately small and placed very much forward, sides amplified laterally, moderately rounded in the posterior angles, base truncate, scrobiculate, with the intervals raised and linear in the posterior part, clothed with a very brief flavescent pubescence, and with long, black, moderately dense bristles; thorax broad, short, nearly as wide as long, slightly sloping on each side at apex, incised laterally but not deeply at a short distance from the apex, nearly straight from there to a short distance from the base, where it is a little broader than the anterior part, and slightly narrowed from there to the declivity, which is perpendicular with the sides denticulate, the disk has eleven very distinct, slightly undulating ridges reaching from apex to base; abdomen sub-sessile, pyriform, second segment distinctly striolate, spots on the first and second segments and band on the third, as in *M. hecate*; ventral carina truncate at apex and obsoletely tridentate; tibiæ with a double series of spines. Length 11 mm.

Allied to *M. hecate* and *M. parca*, but differs from the first in the striolate head and broader thorax, the longitudinal carinæ of which are more numerous, the abdomen is also more pyriform; from *M. parca* it differs by the smaller head, less parallel thorax, and non-dentate upper margin of the declivity.

Hab. Cape Colony (Port Elizabeth).

MUTILLA PARCA.

Female.—Black, with the vertex of the head and dorsal part of thorax ferruginous or ferruginous red, spots and band of abdomen pale-yellow; head broader than the thorax, sub-quadrate, truncate behind, with the posterior angles moderately rounded, eyes small, situated much forward, sub-scribulate, with the intervals linear in the posterior part, hardly pubescent, and set with moderately dense hairs; thorax short, broad, nearly truncate at apex, very slightly incised, almost straight laterally, basal part very slightly broader than the apical one, declivity perpendicular, and upper margin distinctly dentate, disk with five straight median carinæ, two sloping ones on each side of the five median ones and one or two indistinct lateral ones; abdomen sub-sessile, second abdominal segments striolate, spots and band as in the two preceding species, but pale-yellow instead of silvery white; ventral carina sharply denticiform at apex; intermediate segments fringed with dense, sub-flavescent hairs underneath; tibiæ with a double row of spines. Length 12–16½ mm.

Allied to *M. zulu*, Kohl, but the head is broader in proportion to the width of the thorax, the longitudinal carinæ of which are more numerous, the abdomen is more inflated, and there is only a few lateral white hairs on the edge of the second segment instead of a narrow band.

Hab. Cape Colony (Prince Albert, Worcester).

MUTILLA AGAVE.

Female.—Black, with the dorsal part of the thorax ferruginous, spots on the abdominal segments silvery white; head clothed with a sparse, whitish pubescence, scribulate, the intervals raised and longitudinal in the posterior central part, as broad as the thorax, subquadrate, eyes set very forward; thorax nearly parallel, but emarginate laterally for about one-third of the length, truncate perpendicularly behind, the top of the declivity denticulate, the disk scribulate but with the intervals in the shape of longitudinal, slightly undulating, carinæ; abdomen sub-sessile, second segment covered with longitudinal raised lines; the basal segment and also the third, fourth, and fifth with a central, small white patch, second segment also with a similar central apical patch and having also an ovate patch on each side nearer to the apex than to the base; ventral carina of first segment incised at about the median part, truncate and sharp at apex, intermediate segments fringed with dense, greyish hairs underneath; tibiæ with a double series of spines. Length 10½–11 mm.

Hab. ? Cape Colony ; Zambesia (Umfuli River).

In the specimen from Zambesia the thorax is more distinctly carinate longitudinally in the dorsal part.

MUTILLA CYDIPPE.

Female.—Black, with a broad patch on the head, and the thorax dark ferruginous, spots and bands on the abdomen golden-yellow ; head scrobiculate, very slightly pubescent, a little broader than the thorax, amplified laterally behind the eyes, which are small and set forward, posterior angles rounded, base straight ; antennæ piceous red ; thorax truncate in the median part of the apex but with the angles sloping, straight laterally, and hardly narrower at base than at apex, perpendicularly declivous behind and covered with deep, irregular, closely set foveæ ; outer margins not serrulate ; abdomen sessile, basal part of first joint implanted in the second, longer than usual, and as broad as the apical part of the second segment, which is covered with elongated punctures with raised intervals ; the first segment has on each side of the base a broad triangular yellow patch coalescing with two broad elongated ones on the second segment ; these two bands are separated by a narrow median longitudinal space and cover nearly the whole of the upper part of the segment, except a narrow apical band ; the three segments following are covered by a pubescent band ; the first segment is sharply dentate on each side, and the ventral carina is not very sharp, the intermediate segments have a fringe of sub-flavescent hairs, and the tibiæ have a double series of spines. Length $9\frac{1}{4}$ mm.

Hab. Cape Colony (? Carnarvon).

MUTILLA TERPSICHORE.

Female.—Black or piceous, with the thorax ferruginous red on the dorsal part, clothed with a dense white glistening pubescence on the head and laterally on the thorax, where it forms two distinct elongate patches on the epimera on each side ; head a little narrower than the thorax, very rugose, sub-quadrate and with a very high ridge, interrupted in the centre and very sharp at the external angle, running along the base ; thorax truncate at apex, diagonal laterally form the apical angle to about one-third of the length, where it is very distinctly aculeate, and gradually narrowed from there to the declivity, where it is narrower by one-third than at its broadest part and slightly tuberculate at an equal distance from the anterior tubercle and the base ; it is deeply scrobiculate, and the declivity is very sloping ;

abdomen petiolate, ovate, the node of the first segment with a transverse series of six acute tubercles, sharply dentate on each side of the base and with a narrow, apical whitish band or spot, second segment covered with wide, elongate foveæ not very deep and having five white patches, *i.e.*, a triangular median one divided longitudinally in the centre, and the apex of which does not reach the anterior edge nor the base the median part, two supra-apical, median, sub-ovate ones nearly coalescing, and one on each side quite close to the lateral margin, fourth and fifth segments with a sub-quadrate median patch, third and fourth segments with a silvery white band underneath, prolonged slightly beyond the suture on the dorsal joint; ventral carina of first segment dentiform at apex, ventral part of second segment sub-carinate at the base; tibiæ with a double series of spines. Length 13 mm.

Hab. Bechuanaland (Morokweng).

This species stands quite isolated among the South African ones.

MUTILLA PANDORA.

Female.—Pale-red with the dorsal part of the abdomen black and the ventral intermediate segments rufescent, head and thorax clothed with a thick, decumbent, flavescent pubescence, hairs long, dense, dark, abdominal patches and bands slightly flavescent; head nearly as broad as the thorax, finely striolate longitudinally, posterior angles rounded slightly, eyes moderately large; thorax broader laterally in the first anterior part, sides carinate, not emarginate or dentate, declivity perpendicular, it is concave in the centre, and the disk is covered with elongate foveæ hidden by the flavescent pubescence; abdomen sub-sessile, ovate, first segment dentate on each side and short, second segment covered with raised, interrupted lines and having a narrow, juxta-basal, elongate, median patch and a supra-lateral, sub-transverse one at about the median part, equidistant from the outer margin and the centre of the disk; the three following segments are banded with white, but the band of the third one is broad in the centre only and reduced to a narrow fringe laterally; ventral carina of the basal segment indistinct; tibiæ with a double series of spines. Length 8 mm.

Hab. Cape Colony (Namaqualand).

MUTILLA TISIPHONE.

Female.—Head, abdomen, antennæ, and legs black, thorax red, body clothed with hairs, black on the upper part and grey underneath; head small, straight behind the eyes, which are large,

truncate transversely behind with the posterior angles not rounded, narrower than the thorax by one-fourth, very rough, and clothed with a very brief, yellowish pubescence; thorax truncate at tip, slightly ampliate laterally from the anterior angle to a little short of the median part, bi-sinuate and tri-dentate and a little narrowed from the first lateral tooth to the declivity, where it is narrower than the apex by one-fourth; it is deeply foveate, the foveæ closely set and with raised, smooth intervals forming irregular, wavy, longitudinal ridges, declivity perpendicular, serrate laterally; abdomen sessile, first joint truncate in front and with the sides parallel, and angular in the anterior part, very rugose and with a sub-quadrate silvery white patch on each side equidistant from the median and the lateral part and overlapping slightly the basal edge of the second segment which is strigose, third segment clothed with a white band broadly interrupted in the middle; ventral carina of the first segment incised in the middle with the apical part dentiform, second segment with a median raised line and a short depression on each side of the base; tibiæ with one series of spines. Length 13–16 mm.

Allied to *M. cepheus*, Sm., and *M. comparata*, Sm. In shape and size it very much resembles the former, but the head is smaller, and the two white patches on the first segment are more distant; from *M. horrida*, Sm., which has similarly arranged white spots and bands and also a head narrower than the thorax, it differs by the more slender form, more elongato-ovate abdomen, and principally by the transversely elongato-quadrate basal segment; the tibiæ have also one series of spines instead of two, and the second segment is less conspicuously strigose.

Hab. Transvaal (Klerksdorp, Boksburg), Natal (D'Urban, Frere).

MUTILLA CHIONE.

Female.—Head, antennæ, abdomen, and legs black, thorax red, body clothed with black and greyish white hairs; head closely scrobiculate, hardly pubescent, truncate behind, straight laterally with the posterior angle not rounded, space between the base and the posterior part of the eye small; thorax a little broader than the head, straight at apex with the angle sharp, nearly straight laterally but a little narrowed gradually behind where it is about one-fifth narrower at the declivity than at apex, irregularly serrate laterally with one sub-median tooth better defined than the others; it is covered on the dorsal part with long, narrow, foveate punctures, the intervals of which are raised in the form of longitudinal, wavy lines more distinct from the apex to two-thirds of the length; abdomen sub-pyriform, elongate, shagreened, second segment covered

with closely set, smooth, longitudinal raised lines reaching from the base to two-thirds of the length; the white spots on the first abdominal segment are equidistant from the median and lateral parts, and the band on the third segment is narrowly interrupted in the centre; the ventral carina of the first segment is sub-acute at apex; the tibiæ have a double row of spines. Length 9–10 mm.

Hab. Bechuanaland.

This species resembles also *M. horrida*; it is, however, smaller and more slender than the smallest examples of *M. horrida* which I have seen, and the abdomen is more pyriform.

MUTILLA CLOTHO.

Female.—Head, antennæ, abdomen, and legs black, thorax ferruginous red, body clothed with long hairs, sub-flavescent on head and thorax and beneath, black on dorsal part of abdomen; head one-third narrower than the thorax, straight laterally with the posterior angles not rounded, base not quite straight, scrobiculate, briefly pubescent; thorax scrobiculate on the dorsal part with the intervals raised, apical margin sloping slightly from the median part to the anterior angle, straight laterally from there to about one-third of the length, where there is a conspicuous, triangular tooth, and slightly attenuate past the sub-median tooth to the posterior part, the angle of which is very long and triangular, posterior declivity perpendicular; abdominal segments very densely hairy, aciculate with the exception of the second which is covered for two-thirds of the length with elongated, narrow punctures with raised intervals, the two sublateral patches on the first segment and the broadly interrupted band on the third one are whitish yellow, the sixth segment is clothed with dense sub-flavescent hairs; ventral carina of first segment sharp, truncate at tip; tibiæ with a single series of spines. Length 19 mm.

Facies of *M. horrida*, and with the white spots and band on the abdomen similar, but is easily distinguished by the long, triangular, posterior angles of the thorax; the intervals of the dorsal scrobiculation are not longitudinal laterally, and the tibiæ have a single row of spines instead of a double one.

Hab. Transvaal (no exact locality).

MUTILLA MEGAERA.

Female.—Head and thorax ferruginous red, antennæ, legs, and abdomen black, body clothed with long hairs; head closely foveate, narrower than the thorax by one-third, straight laterally behind the eyes, posterior margin slightly arcuate towards the posterior angles,

which are rounded; thorax short, subparallel, as broad as long, and slightly narrower at the declivity than at the apex, hardly emarginate laterally but with a few serrations, declivity perpendicular, dorsal part closely and regularly foveate; abdomen sessile, first joint truncate in front, sides parallel with the stalk very short, shagreened and with an elongate yellowish white patch on each side reaching from the side to a third of the width, second segment scrobiculate and having a small narrow patch on each side of the smooth median part and also a lateral short band, third segment with a narrow band reaching from the sides to about two-fifths of the length, and thus leaving the median part of about one-fifth in width uncovered, the median space between the patches on the second segment and the bands on the third joint is of equal width; ventral carina of the first joint sharp, truncate at apex; tibiæ with a double row of spines. Length 11-13 mm.

Allied to *M. bilunata*, Gerst., but the head is much smaller than the thorax, and the apical patches on the second segment are smaller.

Hab. Cape Colony (Mossel Bay, Port Elizabeth).

(MALES.)

MUTILLA MNEMOSIDES.

Very closely allied to *M. capicola*, which it resembles in size and colour, but the abdomen is ovate, not subglobose, the second segment is not so deeply foveate and the foveæ are not so elongate, the slender basal part of the first segment is much shorter, the ventral carina of the first segment is sharper at apex and base, and the second segment has a central depression limited by a distinct diverging carina on each side and two small, sharp tubercles in the centre of the basal part; in *M. capicola* there is a faint trace only of a median depression. Length 9 mm.

Hab. Natal (Estcourt).

MUTILLA MAJA.

Black, with the prothorax, the dorsal part of the mesothorax, the tegulæ, and also the scutellum red, body covered with long, dense, greyish white hairs; head subquadrate, one-third broader than long, eyes set forward, very little emarginate, not projecting beyond the outer sides; it is deeply and closely punctured, and the massive antennæ are sub-rufescent; thorax covered with deep, closely set punctures with the intervals granulose, mesothorax with a broad but not deep groove along the tegulæ, scutellum raised, metathorax foveate, declivity perpendicular, wings sub-hyaline at base, infuscate

for the remaining part; abdomen covered with very closely set round punctures, first joint with a short, slender stalk and produced in a large node and having a thin, transverse fringe of sub-erect pallid hairs at about the median part, second joint very swollen and with an apical fringe of long, dense, decumbent whitish hairs, third segment with a similar fringe; ventral carina short, sharp, truncate at both ends; tibiæ without any spine. Length 7 mm.

Hab. Cape Colony (Port Elizabeth); presented by Dr. H. Brauns.

This species is easily recognised by the short stalk of the basal abdominal joint, which is swollen into a large node resembling that of a male *Apterogyna*.

MUTILLA BYBLIS.

Anterior part of the head and abdomen black, posterior part of the head, neck, upper part of thorax, and base of the first abdominal segment, red, shining, antennæ and legs infuscate; head as broad as the base of the prothorax, sub-quadrate, slightly attenuate laterally behind, very rugose, villose and covered with a very short silvery pubescence; lateral part of prothorax slightly and bluntly denticulate; metathorax elongated in the shape of a truncate pyramid, covered with deep, closely set foveæ, the intervals of which are sub-tuberculate, mesothorax without any longitudinal groove; first segment of abdomen long, conspicuously petiolate, spinose laterally at base, ventral carina sharp and truncate at both ends, covered like the second segment with small, elongated, closely set punctures, the intervals of which are moderately raised and sharp, upper apical margin with a broad band of silky white hairs, second segment inflated and with a moderately broad white band, third segment also with a similar band, these two bands are replaced underneath by a less dense and narrower greyish white band, the fourth segment has also a similar fringe; intermediate and posterior tibiæ with a double series of spines; abdomen and legs, tarsi included, set with dense, long silvery white hairs. The wings are wanting in the only specimen I have been able to examine. Length 7-11 mm.

The shape of the prothorax is nearly identical with that of the same sex of *M. galanthis*, and the sculpture of the abdomen is similar, but the first abdominal segment is longer, and the foveæ of the metathorax are deeper and broader.

Hab. Bechuanaland (Moroqueng), Cape Colony (Port Elizabeth).

MUTILLA PHYLIRA.

Black, covered with dense greyish hairs, prothorax and mesothorax and also the scutellum bright red; head sub-quadrate, densely and

closely punctured and nearly as broad as the prothorax; prothorax and mesothorax and also the scutellum covered with shallow, moderately broad punctures, mesothorax with four longitudinal grooves, metathorax gradually narrowed towards the base, dehiscent, and covered with regular, closely set foveæ; first and second abdominal segments covered with closely set, elongate punctures with slightly raised intervals, apical margin of both with a narrow silky white band, third segment with a white band of the same width as the one preceding, replaced underneath as in the case of the second segment by a band of less dense grey hairs, fourth joint with a similar but less dense band on the ventral surface; eyes not emarginate; wings totally infusate; intermediate and posterior tibiæ without spines. Length 10 mm.

Resembles *M. byblis*, but is at once distinguished by the narrower thorax and abdomen, which is also not so ovate, the colour of the thorax, and the absence of spines on the tibiæ.

Hab. Cape Colony (? Stellenbosch), Port Elizabeth.

MUTILLA ALCITHOË.

Entirely black, with the exception of the mesothorax and the scutellum which are red and covered with long, moderately dense greyish hairs; head broader than long, and equal in width to the prothorax, rounded laterally from a short distance behind the eyes which are not emarginate; it is closely punctured; prothorax and mesothorax and also the scutellum deeply punctured, the punctures moderately broad, metathorax declivous behind covered with deep, closely set foveæ with the intervals raised, and sub-tuberculate laterally; abdomen similar in shape, sculpture, and clothing to the two preceding species; intermediate tibiæ only with a double row of spines. Length 11 mm.

The shape of the abdomen is like that of *M. byblis*, but the petiole of the first segment is not quite so dilated; in the shape and sculpture of the thorax it approximates more that of *M. phylira*.

Hab. Cape Colony (Stellenbosch).

MUTILLA EGERIA.

This species resembles very much *M. alcithoë* and *M. capensis*. It is of the same size as the latter, and the sculpture and shape of the abdomen are similar, but the thorax is entirely red in *M. capensis*, whereas in *M. egeria* the thorax is black with the dorsal part of the mesothorax and the scutellum red; from *M. alcithoë*, in which the colouration of the thorax is similar, it differs in the shape of the head, which is much more elongated behind the eyes, the cheeks are

not so straight, nor are they aculeate at tip, and the eyes are not projecting; it is also much smaller. Length $7\frac{1}{2}$ mm.

Hab. Cape Colony (Cape Town).

MUTILLA PROCNE.

Black, set with long black hairs, turning to greyish on the legs and on the under part, prothorax totally red; head sub-quadrate, a little broader behind the eyes, which are not emarginate, very roughly and thickly punctured and a little broader than the prothorax; prothorax and mesothorax and also the scutellum closely and roughly punctured, metathorax dehiscent, gradually attenuate towards the apex, covered with moderately deep, but closely set foveæ, the intervals of which are sharp, raised, and sub-tuberculiform; abdomen as in the three preceding species, the silky white bands on the second and third segments are also very noticeable underneath, carina under the first segment hardly sharp at each end; intermediate and posterior tibiæ with one series of spines, basal joint of hind tarsi broadly dilated, compressed, sinuate inwardly, and truncate diagonally at apex; wings fuscous. Length 17 mm.

Easily distinguished by the shape of the basal joint of the hind tarsi.

Hab. Transvaal (Klerksdorp), Zambesia (Salisbury).

MUTILLA ATHIS.

Black, densely covered with long greyish hairs, mesothorax and scutellum very dark ferruginous-red; head nearly twice as wide as the length of the vertex, slightly produced behind the eyes and with the sides diagonal behind, as broad as the thorax at its widest part; eyes prominent, ovate, not emarginate, vertex very closely and deeply punctured; prothorax much rounded and produced in a sharp angle laterally, mesothorax with four longitudinal grooves and covered, like the scutellum, with closely set punctures, metathorax short, very dehiscent, gradually attenuate behind in the shape of a truncate pyramid and covered with closely set foveæ, the intervals of which are very slightly tuberculiform; first abdominal segment long, petiolate, aculeate laterally at base, covered like the second one with elongate spots with smooth, moderately raised intervals, basal part of both segments fringed with a narrow band of silky orange hairs, third segment also with a band of orange hairs of the same width as the one on the second segment; abdominal carina serrulate; tibiæ without spines; wings subhyaline for two-thirds of the length, infusate at tip. Length $11\frac{1}{2}$ mm.

No other South African species known to me with long, petiolate basal abdominal segment has the prothorax rounded in front and aculeate laterally as the present species.

Hab. Cape Colony (Cape Town).

MUTILLA DEIOPEIA.

Black, covered with a dense greyish villosity and a short pubescence of the same colour on the head and thorax; antennæ and legs sub-rufescent; head very closely punctured, narrowed diagonally from behind the eyes, which are large and not emarginate; thorax deeply and irregularly punctured, the punctures broader and deeper on the metathorax, which is very declivous behind, one-fourth broader than long, and rounded laterally at the basal part of the declivity; abdomen with a dark cyaneous tinge, first segment covered with closely set, broad punctures, second segment very closely and finely punctured, the punctures hardly elongate and with no raised intervals, the silky white band on the third segment a little wider than that of the second; ventral carina of the first segment hardly truncate at apex, second one with a raised line reaching from the base to about the median part; tibiæ without spines. Length 8 mm.

Hab. Cape Colony (Worcester, Port Elizabeth).

MUTILLA CAPENSIS, SAUSS.,

Reis. der Novara. Hymenopt., p. 107, pl. iv., fig. 64.

Black, with the prothorax and mesothorax, and also the scutellum red; antennæ and legs piceous red; head a little broader than the thorax, nearly twice as broad as long, very roughly punctured, eyes large, not emarginate; prothorax aculeate laterally and slightly sinuate behind the sharp projection, mesothorax with two longitudinal, median grooves, metathorax regularly attenuate behind and strongly dehiscent; the upper part is roughly and closely punctured, and the punctures on the metathorax much broader and deeper than in the prothorax and mesothorax; first segment of abdomen long, petiolate, basal part of the first, second, and third segments with a narrow silky white band, second segment covered with narrow, elongate, closely set punctures; ventral carina on the first segment truncate at apex, the point sharp; tibiæ without spines; wings hyaline or nearly so at base, infusate at tip. Length 8 mm.

Hab. Cape Colony (Cape Town).

The sculpture of the abdomen and the white pubescent bands are exactly as in the female. I have specimens of both sexes caught *in copulâ*.

MUTILLA IMITATRIX, Smith,
New Species of Hymenopt., 1879, p. 194.

Black, covered with long, dense, whitish hairs, intermingled with black ones, first and second abdominal segments bright red; head and thorax clothed with a slightly flavescent pubescence, very thick on the scutellum; head with large eyes hardly emarginate, slightly broader than the thorax, space between the eyes and the outer angle moderate, posterior angle rounded; suture of the prothorax and mesothorax deeply marked, mesothorax very convex, scutellum also very convex, tegulae very small, metathorax sloping, moderately quadrate; abdomen petiolate, with the basal joint moderately long and covered with elongate punctures like the second one, and with no trace of whitish patch or band, second segment with a narrow black band at apex, fourth and fifth segments clothed with a white band; ventral carina of first segment produced in a long median spine, second segment with a sharp, median carina reaching to about half the length; tibiae spinose. Length $8\frac{1}{2}$ mm.

Hab. Transvaal (Klerksdorp), both sexes.

MUTILLA SEMELE.

Rufo-testaceous, abdomen with the exception of the first basal segment and the apical one fuscous black, legs flavescent, the whole body covered with long, villous, pallid hairs; head small, with the eyes very large, prominent and not emarginate, nearly the whole of the vertical part occupied by the ocelli, which are very large and very convex, punctures hardly discernible; antennae moderately long and thick, but filiform; thorax rugulose, mesothorax with two median longitudinal grooves, metathorax deeply and closely foveate; first segment of abdomen long, petiolate, and with a narrow fuscous band at the apex, ventral carina reaching from base to apex and serrulate, second segment punctulate and fuscous like the three following; tibiae without spines; wings hyaline, the stigma and apical part of the fore wings slightly fuscous; they have only one cubital cell well defined, no recurrent nervure, no discoidal or apical cell, and the third submarginal one is not closed. Length 8–11 mm.

Hab. Cape Colony (Carnarvon).

Resembles *M. pedunculata*, Klug, from Egypt and Arabia.

MUTILLA THISBE.

Allied to the preceding species, but very light testaceous and with the apex of the first and second segments narrowly marginate with fuscous, third segment entirely fuscous; sculpture, vestiture, and

shape of *M. semele*; the basal segment is equally long and slender, but the node is not quite so thick and the abdomen is a little more elongato-ovate; legs without spines; neuration and colour of wings as in *M. semele*. Length 8–11½ mm.

Hab. Cape Colony (Carnarvon, Namaqualand).

MUTILLA AMALTHEA.

Head and thorax bluish black, metathorax dark cyaneous, abdomen distinctly cyaneous, legs and antennæ black, tegulæ dark ferruginous; pubescence dense, greyish black; head small, very rugose in front, closely punctured behind, eyes moderately large and slightly emarginate; prothorax and mesothorax, and also the scutellum, deeply and closely punctured, mesothorax with two median, longitudinal grooves, metathorax foveate, and with a broad groove reaching from the base to one-fourth of the length, smooth and with the sides marginate; abdominal segments closely punctured, the punctures on the second segment deep and broad, median part of the second and third segments with a smooth, depressed narrow line, basal segment a little elongate but not subpedunculate, ventral carina of first segment aculeate behind; the whole abdomen is clothed with dark hairs; tibiæ non-spinose; legs clothed with a slightly brownish villosity; antennæ thick, joints slightly marginate in the upper margin, and a little ampliate underneath; wings entirely infusate. Length 10½–12 mm.

Hab. Cape Colony (Stellenbosch).

MUTILLA GORGE.

Entirely similar to *M. amalthea* in shape and sculpture; the antennæ are also thick and the joints alike, the colour is also blue-black on the head and thorax, but the mesothorax, scutellum, and tegulæ are red, and the former has also two very distinct longitudinal median grooves; the abdomen is cyaneous, clothed with black villous hairs, and similarly punctured; the wings are totally infusate, and the ventral carina of the first segment is identical in shape. Length 12 mm.

Hab. Cape Colony (Stellenbosch).

MUTILLA ACIDALIA.

Black, clothed with a dense black pubescence except on the vertex of the head and the prothorax where the pubescence is golden-yellow, third dorsal segment of abdomen nearly entirely covered by a silky white band; head small, very rugose, eyes large, ovate, not emar-

ginate ; thorax very rugose, mesothorax with four distinct longitudinal grooves and produced behind in each side in a blunt, dentiform, horizontal process, not grooved on the upper part ; metathorax transverse, slightly rounded laterally at apex, scrobiculate ; first basal segment short, petiolate, fringed with a band of white hairs, ventral carina sharp, truncate at apex, second segment deeply and closely punctured in the anterior part and laterally, the ventral part with a very distinct sharp median carina reaching nearly to the apex, and a less conspicuous and much shorter one on each side, third dorsal segment with a broad silky white band hardly reaching the sides ; tibiæ without spines ; wings fuscous, but with a sub-violaceous tinge. Length 14–16 mm.

Hab. Cape Colony (Cape Town, Stellenbosch, Worcester), Port Elizabeth.

Allied to *M. Godefredi*, Rados. and Sich., but easily distinguished by the yellow pubescence clothing the vertex of the head and the prothorax, the presence of three ventral carinæ on the second segment of the abdomen, and the absence of an apical white silky patch on the dorsal part of the thorax, the non-interrupted white band on the third abdominal segment, and also the more carinate process of the scutellum.

MUTILLA SPECULATRIX, Smith,
New Species of Hymenoptera, p. 194.

Black, with the sides of the mesothorax and an interrupted band on the third segment of abdomen clothed with a white pubescence, first and second segment of abdomen red ; head thickly clothed with short, dense white and black hairs, eyes large, emarginate ; mandibles arcuate, very slightly incised at tip ; thorax rugose, mesothorax with two very distinct median grooves, and slightly tuberculate alongside the tegulæ, post-scutellum clothed with a white pubescence, metathorax rounded behind, sub-carinate laterally, foveate ; wings purplish for two-thirds of the length, sub-hyaline at base ; abdomen closely punctured, intervals smooth, band on third segment narrowly interrupted in the centre ; ventral carina of first segment long, sharp, twice incised ; tibiæ without any spines. Length $8\frac{1}{2}$ – $10\frac{1}{2}$ mm.

Hab. Cape Colony (Cape Town).

MUTILLA TYRO.

Shape, size, and colour of *M. cloantha*, but the mesothorax is not clothed with greyish or sub-flavescent hairs, and the post-scutellary region and the base of the metathorax are clothed with a dense, silky subflavescent pubescence ; the metathorax has a broad, median groove,

reaching from the base to the median part, not highly carinate laterally and ending in an aculeate tubercle; the third segment only of the abdomen is banded with white, and the spurs of the tibiæ are white.

This species is closely allied to *M. charaxes*, Sm., from Guinea; it has also no white or subflavescent pubescence on the prothorax, and only one band on the third abdominal segment, but in *M. tyro* the metathorax is clothed at base with a thick pubescence, and the groove is neither so long nor so aculeate, nor is it carinate laterally; the abdominal band is not interrupted in the centre. Length $14\frac{1}{2}$ mm.

Hab. Cape Colony (Port Elizabeth; Uitenhage).

MUTILLA CLOANTHA.

Black, with the first segment of abdomen totally red, second segment also red but with an apical narrow black margin, body covered with a dense pubescence, greyish white on the frontal part and the prothorax, band on the abdomen silvery white; head transverse, straight laterally behind, eyes moderately large, deeply emarginate, punctures broad, closely set, antennæ massive; thorax deeply and closely punctured, prothorax clothed with a dense greyish white pubescence, mesothorax with two median distinct grooves and two supra-lateral ones less defined, tegulæ very large, piceous red, scutellum convex, slightly emarginate behind, metathorax deeply foveate and having at about the median part two small transverse ridges more or less aculeate and not connected with the base by a groove; first and second segments of abdomen very roughly shagreened, third basal segment only clothed with a silky white band; abdominal carina of the first segment produced in a long vertical tooth at apex; tibiæ not spinose; wings infusate from a short distance from the base. Length $13-13\frac{1}{2}$ mm.

The difference between this species and *M. exaltata*, Sm., consists in the absence of a pubescent band on the fourth segment; the metathorax of the latter has no median groove, and the transverse carina is somewhat bifid and not much developed.

Hab. Cape Colony (Cape Town, Stellenbosch, Worcester, Kowie).

MUTILLA HERMIONE.

Black, clothed with whitish villose hairs; mesothorax and scutellum red, tegulæ piceous red; head very rugose, transverso-quadrangle, not rounded laterally behind, slightly broader than the prothorax at apex and having two median longitudinal narrow grooves in the posterior part; mesothorax, scutellum, and sides punctulate, metathorax declivous, a little attenuate and rounded

laterally behind; abdomen neither pedunculate nor petiolate, first abdominal segment with a basal lateral spine, and closely punctured like the following ones, punctures moderately deep, narrow and with smooth intervals, the whitish bands on the three basal segments very narrow; eyes slightly emarginate; ventral carina, abrupt and sharp at tip, denticulate in the middle; legs without spines; wings slightly infusate from one-third of the length to the apex. Length 7 mm.

Hab. Cape Colony (Hope Town), Port Elizabeth.

MUTILLA APPIAS.

Black, densely covered with a greyish villosity; head nearly as broad as the prothorax, diagonally attenuate behind the eyes which are large, not emarginate; prothorax, mesothorax and scutellum roughly shagreened, metathorax short, very declivous, nearly twice as broad as long with the basal part of the declivity rounded, red, and covered with broad, deep punctures, broader and with the intervals raised in the median part, prothorax with a broad band of dense whitish hairs covering nearly the whole of the surface; first abdominal segment moderately long but distinctly petiolate, subfoveate, second segment closely punctured, the punctures deeper and sub-elongate in the anterior part, while the posterior part and also the sides are only deeply aciculate; ventral ridge of the first abdominal segment sharp, truncate and sub-aculeate at apex; tibiæ without spines; wings totally infusate. Length $10\frac{1}{2}$ –14 mm.

Hab. Transvaal (Klerksdorp), Cape Colony (Port Elizabeth), Natal (Estcourt).

MUTILLA CINCHREIS.

Black, clothed with dense, short, villous black hairs, dorsal part of abdomen with a faint, dark cyaneous tinge; antennæ and legs opaque black, the joints of the latter thick and sub-acute inwardly at tip; head rugose, eyes deeply emarginate; mesothorax with two deep, median longitudinal grooves, metathorax more broadly and deeply punctured than the prothorax mesothorax and sides, declivous behind and rounded laterally; first abdominal segment short, not petiolate, the segments following closely punctured, the apical bands on the first and second segments narrow, the one on the third segment broad and nearly clothing the whole of it; ventral carina of first segment short, truncate at tip, both ends sharp; tibiæ without spines; wings infusate all over. Length 9 mm.

Hab. Cape Colony (Worcester, Port Elizabeth).

M. deiopieia is the South African species, the description of which

would agree most with that of *M. cinchreis*; but the latter is more robust, the antennæ are very much longer and thicker, the first abdominal segment is short and not petiolate, the second segment and following are more pyriform, and the ventral part of the second segment has no carina.

M. HIPPOLYTE.

Black, abdomen with a faint dark-blue tinge, tegulæ red; head and thorax clothed with long, dense, sub-flavescent hairs, abdominal bands orange-yellow; head transverse, rugose, straight laterally behind the eyes which are slightly emarginate; thorax rugose, mesothorax with two longitudinal grooves, metathorax with the posterior angles rounded; abdomen sessile, band on the first segment overlapping the base of the second, which is covered with short, elongate, densely set punctures, and has on each side a narrow band reaching a quarter of the width, third segment covered with a broad band interrupted in the centre; ventral carina of first segment truncate and aculeate at base; wings infusate throughout. Length 11 mm.

Allied to *M. tecmessa*, but differs by the colour of the thorax, which is entirely black with the tegulæ red, whereas in *M. tecmessa* the dorsal part of the prothorax and mesothorax and the scutellum are red, the second segment of the abdomen is covered with small, closely set, elongate punctures instead of moderately deep, round, non-confluent ones, the abdomen is nearly black instead of cyaneous, the apical band on the second segment is very broadly interrupted instead of reaching from side to side, and the ventral carina of the first segment is more truncate and more aculeate at base.

Hab. Cape Colony (? Calvinia).

MUTILLA NYCTIMENE.

Totally black, clothed with black and white hairs; head closely punctured, the hairs in the anterior part and along the posterior part silvery white, eyes not emarginate; thorax closely and deeply punctured, the punctures on the metathorax broader and deeper, mesothorax covered with a dense, greyish white pubescence, mesothorax with two longitudinal grooves not very apparent, scutellum raised, convex, post-scutellum with a small fascicle of white hairs, metathorax with the posterior angles rounded; abdomen sub-petiolate, all the segments finely shagreened, basal joint with a narrow, apical silvery white band, second segment with a broad, somewhat rounded pubescent white patch placed in the middle of the basal part and reaching to about the median part, apical

marginal band narrower than the one on the third segment which clothes it entirely; ventral carina of first segment, short, sinuate, sharply aculeate at apex, second one with a distinct median carina reaching from the base to the median part; tibiæ without spines; wings totally infuscate. Length 13 mm.

Hab. Zambesia (Umfuli River).

MUTILLA PROSERPINA.

Black, with the thorax bright red, and the spots and bands on the abdomen sub-flavescent; head transverse, nearly straight laterally, arcuate behind, twice as broad as the thorax, roughly and closely punctured, frontal tubercles distinct, eyes set forward; thorax without any noticeable suture between the prothorax and mesothorax, tegulæ very small, almost rudimentary, no wings, scutellum hardly defined, metathorax ampliate, as wide as the prothorax, rounded laterally behind; abdomen sub-pyriform, sub-sessile, second segment with two median rounded spots equidistant from base and apex, third segment with a sub-flavescent band, apical segment pubescent, and spines long; ventral carina of first segment truncate at both ends; tibiæ with a double series of spines. Length 3 mm.

Hab. Cape Colony (? Beaufort West).

The general appearance is that of a female with thorax constricted laterally in the median part; the almost rudimentary tegulæ tend to prove that the disappearance of the wings is not accidental. I have, however, seen one example only.

MUTILLA ERINNYS.

Male.—Black, with the prothorax, mesothorax and the scutellum red; head moderately small, scrobiculate, transverse on the vertex, with the eyes distinctly emarginate; prothorax and mesothorax foveate, tegulæ of the same colour, mesothorax without any longitudinal grooves, scutellum distinctly carinate laterally, the carinæ projecting in a sharp tooth beyond the median part which is declivous and has a narrow incision in the middle separating it in two short lobes, metathorax with two deep, broad, smooth depressions close to the post-scutellum, declivous at base with the posterior angles produced in a long carinate and triangular process; abdomen sessile, closely punctured, the punctures on the second segment not so closely set and leaving a narrow, nearly smooth median interval with a narrow, longitudinal line, first segment with a quadrate, sub-lateral white patch, third and fourth segments with a moderately broad band extending on each side from the side to two-fifths of the width; this band is, however, narrower on the fourth than on the third segment; ventral carina of the first joint in

the shape of a long incurved tooth, second joint also with a median carina ending in a sharp, long, dentiform process at the apex; tibiæ without spines; wings fuscous except at the extreme base. Length 19 mm.

Hab. Transvaal (Barberton).

The dentiform process on the ventral surface of the second segment of the abdomen is nearly similar to that of *M. calcariventris*, Rados. and Sich.

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III.—*List of the Reptiles and Batrachians of South Africa, with Descriptions of New Species.*—By W. L. SCLATER, M.A., F.Z.S., Director. (With Plate V.)

THE following list of Reptiles has been compiled from Mr. Boulenger's catalogues of the British Museum collection, to which in each case a reference has been given, as well as to the original author of the specific name.

The species described since the publication of the catalogues have been added in their proper places, together with the reference to the original description.

The definition of South Africa as used in this list is Africa south of the Cunene River on the west, and of the Zambesi on the east, and therefore includes the whole of German South-West Africa, that part of the Chartered Company's territory and of Portuguese East Africa which lies south of the Zambesi, the Republics, and the Colonies.

On the whole this forms the most convenient boundary for our purpose, as it corresponds to what is politically considered to be included in South Africa, and although not a natural faunistic boundary, is easier to deal with than the tropic of Capricorn, which is the one often adopted.

Following the list will be found descriptions of a new species of Snake, Lizard, and Frog, the latter necessitating the formation of a new genus; these specimens have been compared with their nearest allies in the British Museum, and my best thanks are due to Mr. Boulenger for great help and assistance in this matter.

The following table shows the number of types or cotypes in the South African Museum, and the numbers of species in the Museum as compared with the total number found in South Africa.

An asterisk prefixed to a species in the list indicates that it is not represented in the Museum.

	No. of Types or Cotypes.	No. of Species in S.A. Museum.	No. of Species not in S.A. Museum.	Total number in South Africa.
Chelonia	1	17	2	19
Emydosauria	0	1	0	1
Ophidia	3	64	16	80
Lacertilia	5	87	31	118
Batrachia	1	22	11	33
Total	10	191	60	251

PART I.—LIST.

CHELONIA.

FAMILY I.—SPHARGIDÆ.

1. *Dermochelys coriacea* (Linn.); Cat. Chel., p. 10.—One specimen recently stranded in Table Bay, and presented to the Museum by Mr. P. C. Keytel.

FAMILY II.—TESTUDINIDÆ.

2. *Cinixys belliana* Gray; Cat. Chel., p. 143.—A tropical African species recently obtained for the South African Museum from Mazoe, in Mashonaland, by Mr. J. ff. Darling.
3. *Homopus arcolatus* (Thunberg); Cat. Chel., p. 147.
4. *Homopus femoralis* Bouleng.; Cat. Chel., p. 147.
5. *Homopus signatus* (Walbaum); Cat. Chel., p. 148.
- *6. *Testudo calcarata* Schneid.; Cat. Chel., p. 159.
7. *Testudo pardalis* Bell; Cat. Chel., p. 160.
8. *Testudo geometrica* Linn.; Cat. Chel., p. 162.
9. *Testudo verreauxi* Smith; Cat. Chel., p. 163.—The Museum possesses one shell of this apparently rare form from near Beaufort West.

10. *Testudo trimeni* Bouleng. ; Cat. Chel., p. 163.—The cotype of this species obtained by the Rev. G. H. R. Fisk from the mouth of the Orange River is in the South African Museum.
11. *Testudo tentoria* Bell ; Cat. Chel., p. 164.
12. *Testudo smithii* Bouleng. ; Cat. Chel., p. 165.
- *13. *Testudo fiskii* Bouleng. ; Cat. Chel., p. 165.
14. *Testudo oculifera* Kuhl ; Cat. Chel., p. 165.
15. *Testudo angulata* Schweigg. ; Cat. Chel., p. 178.

FAMILY III.—CHELONIDÆ.

16. *Chelone imbricata* (Linn.) ; Cat. Chel., p. 183.—The Hawksbill is not common on the South African coast ; one specimen from False Bay, presented by Mr. C. A. Fairbridge, is in the Museum.
17. *Thalasso chelys caretta* (Linn.) ; Cat. Chel., p. 184.

FAMILY IV.—PELOMEDUSIDÆ.

18. *Sterno thærus sinuatus* Smith ; Cat. Chel., p. 194.
19. *Pelomedusa galeata* (Schoepff.) ; Cat. Chel., p. 197.

EMYDOSAURIA.

FAMILY I.—CROCODILIDÆ.

1. *Crocodilus niloticus* Laur. ; Cat. Chel., p. 283.

OPHIDIA.

FAMILY I.—TYPHLOPIDÆ.

1. *Typhlops braminus* (Daud.) ; Cat. Sn. i. p. 16.
2. *Typhlops verticalis* (Smith) ; Cat. Sn. i. p. 32.—The Museum possesses two specimens of this apparently rare ground snake, from Malmsbury, in the western part of the Colony, and from Delagoa Bay respectively.
- *3. *Typhlops auchietæ* Bocage ; Cat. Sn. i. p. 40.
- *4. *Typhlops mossambicus* (Peters) ; Cat. Sn. i. p. 41.

5. *Typhlops bibronii* (Smith); Cat. Sn. i. p. 44.
6. *Typhlops schlegelii* Bianconi; Cat. Sn. i. p. 44; Boulenger, Ann. Mag. N. H. (6) ii. p. 139.
7. *Typhlops delalandii* Schleg.; Cat. Sn. i. p. 45.
8. *Typhlops mucroso* (Peters); Cat. Sn. i. p. 46.
9. *Typhlops schinzi* Boettg.; Cat. Sn. i. p. 47.—The Museum possesses a specimen of this snake obtained in Namaqualand.

FAMILY II.—GLAUCONIIDÆ.

- *10. *Glauconia distanti* Bouleng.; Cat. Sn. i. p. 62.
11. *Glauconia nigricans* (Schleg.); Cat. Sn. i. p. 67.
- *12. *Glauconia conjuncta* (Jan); Cat. Sn. i. p. 67.
- *13. *Glauconia scutifrons* (Peters); Cat. Sn. i. p. 68.

FAMILY III.—BOIDÆ.

14. *Python sebae* (Gmel.); Cat. Sn. i. p. 86.

FAMILY IV.—COLUBRIDÆ.

SUB-FAMILY I.—COLUBRINÆ.

15. *Tropidonotus olivaceus* (Peters); Cat. Sn. i. p. 227.—Of this species, which has been hitherto only known from tropical Africa, the Museum has recently acquired a specimen from Salisbury, in Mashonaland, presented by Mr. G. A. K. Marshall.
16. *Ablabophis rufulus* (Licht.); Cat. Sn. i. p. 318.
17. *Lamprophis aurora* (Linn.); Cat. Sn. i. p. 321.
- *18. *Lamprophis inoratus* Dum. and Bibr.; Cat. Sn. i. p. 321.
19. *Lamprophis fiskii* Bouleng.; Cat. Sn. i. p. 322.
- *20. *Lamprophis fuscus* Bouleng.; Cat. Sn. i. p. 322.
21. *Boodon infernalis* Günth.; Cat. Sn. i. p. 330.
22. *Boodon guttatus* (Smith); Cat. Sn. i. p. 331.—Of this species, of which the type is no longer in the British Museum, the

South African Museum possesses an example from the neighbourhood of Cape Town, obtained some years ago, but only recently identified.

23. *Boodon lineatus* Dum. and Bibr.; Cat. Sn. i. p. 332.
- *24. *Boodon mentalis* Günth.; Cat. Sn. i. p. 335.
25. *Lycophidium capense* (Smith); Cat. Sn. i. p. 339.
26. *Simocephalus capensis* (Smith); Cat. Sn. i. p. 345.
27. *Simocephalus nyassæ* Günth.; Cat. Sn. i. p. 347.—The Museum possesses examples of this snake from Natal and from Delagoa Bay, which extend the range of the species southward from East Africa, where it has been only hitherto known
28. *Lycodon aulicus* (Linn.); Cat. Sn. i. p. 352.—There is a specimen of this common Indian snake in the Museum, obtained from Delagoa Bay. It is not improbable that it has been brought thither by artificial means.
29. *Pseudaspis cana* (Linn.); Cat. Sn. i. p. 373.
30. *Chlorophis hoplogaster* (Günth.); Cat. Sn. ii. p. 93.
31. *Chlorophis natalensis* (Smith); Cat. Sn. ii. p. 94.
32. *Chlorophis irregularis* (Leach); Cat. Sn. ii. p. 96.—The Museum possesses two examples of this snake, hitherto recorded only from tropical Africa, obtained in Mashonaland by Mr. J. ff. Darling.
33. *Philothamnus semivariegatus* (Smith); Cat. Sn. ii. p. 99.
34. *Prosymna sunderallii* (Smith); Cat. Sn. ii. p. 247.
- *35. *Prosymna frontalis* (Peters); Cat. Sn. ii. p. 248.
36. *Homolosoma lutrix* (Linn.); Cat. Sn. ii. p. 274.
37. *Homolosoma variegatum* Peters; Cat. Sn. ii. p. 276.
38. *Grayia lubrica*, sp. nov. (see below).

SUB-FAMILY II.—RHACHIODONTINÆ.

39. *Dasypeltis scabra* (Linn.); Cat. ii. p. 354.

SUB-FAMILY III.—DIPSADOMORPHINÆ.

40. *Pythonodipsas carinata* Günth.; Cat. Sn. iii. p. 45.
41. *Tarbophis semiannulatus* (Smith); Cat. Sn. iii. p. 51.—This snake does not appear to have been hitherto recorded from South Africa. The Museum possesses specimens from Barberton, in the Transvaal, and from Delagoa Bay, presented by Dr. P. Rendal and Mr. J. de Costa, respectively.
42. *Leptodira hotambœia* (Laur.); Cat. Sn. iii. p. 89.
43. *Amplorhinus multimaculatus* Smith; Cat. Sn. iii. p. 125.
44. *Trimerorhinus rhombeatus* (Linn.); Cat. Sn. iii. p. 138.
45. *Trimerorhinus tritaniatus* (Günth.); Cat. Sn. iii. p. 139.
46. *Rhamphiophis multimaculatus* (Smith); Cat. Sn. iii. p. 148.
47. *Psammophis notostictus* Peters; Cat. Sn. iii. p. 156.
- *48. *Psammophis trigrammus* Günth.; Cat. Sn. iii. p. 159.
49. *Psammophis sibilans* (Linn.); Cat. Sn. iii. p. 161.—This snake, which is found in tropical Africa and Egypt extends southwards to Mashonaland, whence the Museum has received specimens. The allied form found in the Colony is assigned by Mr. Boulenger to *P. nostostictus*.
50. *Psammophis furcatus* Peters; Cat. Sn. iii. p. 164.
51. *Psammophis brevirostris* Peters; Cat. Sn. iii. p. 166.
52. *Psammophis crucifer* Boie; Cat. Sn. iii. p. 169.
- *53. *Psammophis jallæ*, Peracca, Bol.; Mus. Turin xi. No. 225 [Rhodesia].
54. *Thelotornis kirtlandii* (Hallow.); Cat. Sn. iii. p. 185.
55. *Dispholidus typus* (Smith); Cat. Sn. iii. p. 187.
- *56. *Calamelaps concolor* (Smith); Cat. Sn. iii. p. 246.
57. *Macrelaps microlepidotus* (Günth.); Cat. Sn. iii. p. 255.
58. *Aparallactus capensis* Smith; Cat. Sn. iii. p. 259.

SUB-FAMILY IV.—HYDROPHIINÆ.

59. *Hydrus platurus* (Linn.); Cat. Sn. iii. p. 267.—This sea-snake has been caught in both Table and False Bays.

SUB-FAMILY V.—ELAPINÆ.

60. *Elapechis decosteri* (Bouleng.) ; Cat. Sn. iii. p. 360.—Of this species the Museum possesses the original type from Delagoa Bay, presented by Mr. J. de Costa.
- *61. *Elapechis sundevallii* (Smith) ; Cat. Sn. iii. p. 360.
62. *Naia haie* (Linn.) ; Cat. Sn. iii. p. 374.—This, the tropical African form of cobra, extends as far south as Delagoa Bay, from whence the South African Museum is indebted for a specimen to Mr. J. de Costa.
63. *Naia flava* (Merr.) ; Cat. Sn. iii. p. 376.—This is the commonest form of cobra, and is found throughout the Colony.
64. *Naia nigricollis* Reinh. ; Cat. Sn. iii. p. 378.—This is the cobra of Natal and the east coast.
- *65. *Naia auchietæ* Bocage ; Cat. Sn. iii. p. 387.
66. *Sepeodon hæmachates* (Lacép.) ; Cat. Sn. iii. p. 389.
67. *Aspidelaps lubricus* (Laur.) ; Cat. Sn. iii. p. 390.
68. *Aspidelaps scutatus* (Smith) ; Cat. Sn. iii. p. 391.
69. *Homorelaps lacteus* (Linn.) ; Cat. Sn. iii. p. 409.—This, the garter snake, is better known under its old name of *Elaps hygeæ*.
- *70. *Homorelaps dorsalis* (Smith) ; Cat. Sn. iii. p. 410.
71. *Dendraspis angusticeps* (Smith) ; Cat. Sn. iii. p. 437.

FAMILY V.—VIPERIDÆ.

72. *Causus rhombeatus* (Lichtenst.) ; Cat. Sn. iii. p. 467.
73. *Causus defilippii* (Jan) ; Cat. Sn. iii. p. 469.
74. *Bitis arietans* (Merr.) ; Cat. Sn. iii. p. 493.
75. *Bitis peringueyi* (Bouleng.) ; Cat. Sn. iii. p. 495.—The type of the species obtained near Walfisch Bay, is in the South African Museum, presented by Mr. L. Péringuey.
76. *Bitis atropos* (Linn.) ; Cat. Sn. iii. p. 495.
77. *Bitis inornata* (Smith) ; Cat. Sn. iii. p. 496.
78. *Bitis cornuta* (Daud.) ; Cat. Sn. iii. p. 497.
79. *Bitis caudalis* (Smith) ; Cat. Sn. iii. p. 498.

*80. *Bitis gabonica* (Dum. and Bibr.); Cat. Sn. iii. p. 499.

81. *Atractaspis bibronii* (Smith); Cat. Sn. iii. p. 515.

LACERTILIA.

FAMILY I.—GECKONIDÆ.

1. *Chondrodactylus weiri* Bouleng., Proc. Zool. Soc., 1887, p. 340.

2. *Chondrodactylus angulifer* Peters; Cat. Liz. i. p. 11.

3. *Ptenopus garrulus* (Smith); Cat. Liz. i. p. 15.

4. *Phyllodactylus porphyreus* (Daud.); Cat. Liz. i. p. 87.

*5. *Phyllodactylus lineatus* Smith; Cat. Liz. i. p. 92.

6. *Cedura africana* Bouleng., Ann. Mag. N. H. (6) ii., 1888, p. 137.
—The Museum possesses one of the original specimens described by Mr. Boulenger from Namaqualand, presented by Mr. R. Nightingale.

7. *Cedura nivaria* Bouleng., Proc. Zool. Soc. 1894, p. 608, pl. xlvii. fig. 1.

*8. *Hemidactylus mabouia* (Moreau de Jonnès); Cat. Liz. i. p. 122.

9. *Lygodactylus capensis* (Smith); Cat. Liz. i. p. 160.

*10. *Homopholis wahlbergii* (Smith); Cat. Liz. i. p. 191.

11. *Homopholis macrolepis* Bouleng.; Cat. Liz. iii. p. 489.—The cotype of this species from Delagoa Bay is in the South African Museum

12. *Pachydactylus bibronii* (Smith); Cat. Liz. i. p. 201.

13. *Pachydactylus capensis* (Smith); Cat. Liz. i. p. 202.

14. *Pachydactylus formosus* Smith; Cat. Liz. i. p. 203.

15. *Pachydactylus rugosus* Smith; Cat. Liz. i. p. 204.

16. *Pachydactylus ocellatus* (Cuv.); Cat. Liz. i. p. 205.

17. *Pachydactylus maculatus* Smith; Cat. Liz. i. p. 206.

*18. *Pachydactylus mentomarginatus* Smith; Cat. Liz. i. p. 207.

19. *Pachydactylus mariquensis* Smith; Cat. Liz. i. p. 207.

20. *Pachydactylus fasciatus* Bouleng., Ann. Mag. N. H. (6) ii. 1888, p. 138.—The Museum possesses the cotype of this species, described by Mr. Boulenger, from Namaqualand.
- *21. *Pachydactylus affinis* Bouleng., Ann. Mag. N. H. (6) xvii. p. 21 (1896)
- *22. *Pachydactylus lævigatus* Fischer, J. B. Hamb. Wiss. Anst. v. 1885, p. 15.
- *23. *Colopus wahlbergii* Peters; Cat. Liz. i. p. 208.
24. *Elasmodactylus namaquensis*; sp. nov. (see below).
25. *Rhoptropus afer* Peters; Cat. Liz. i. p. 217.
26. *Rhoptropus ocellatus* Bouleng.; Cat. Liz. iii. p. 490.

FAMILY II.—AGAMIDÆ.

27. *Agama hispida* (Linn.); Cat. Liz. i. p. 349.
28. *Agama brachyura* Bouleng.; Cat. Liz. i. p. 350.
29. *Agama aculeata* Merr.; Cat. Liz. i. p. 351.
30. *Agama armata* Peters; Cat. Liz. i. p. 352.
31. *Agama atra* Daud.; Cat. Liz. i. p. 352.
32. *Agama planiceps* Peters; Cat. Liz. i. p. 358.
33. *Agama atricollis* Smith; Cat. Liz. i. p. 358.
- *34. *Agama microterolepis* Bouleng., Ann. Mag. N. H. (6) xvii. p. 22 (1896) [Transvaal].

FAMILY III.—ZONURIDÆ.

35. *Zonurus giganteus* (Smith); Cat. Liz. ii. p. 253.
36. *Zonurus cataphractus* (Boie); Cat. Liz. ii. p. 255.
37. *Zonurus cordylus* (Linn.); Cat. Liz. ii. p. 256.
38. *Zonurus polyzonus* (Smith); Cat. Liz. ii. p. 257.
- *39. *Zonurus capensis* (Smith); Cat. Liz. ii. p. 258.
- *40. *Zonurus jonesii* Bouleng., Ann. Mag. N. H. (6) vii. p. 417 (1891) [Transvaal].

- *41. *Zonurus vittifer* Reichenbach, Zool. Anz. 1887, p. 372 [Zululand].
42. *Pseudocordylus microlepidotus* (Cuv.); Cat. Liz. ii. p. 259.
43. *Platysaurus capensis* Smith; Cat. Liz. ii. p. 261.—The Museum possesses one example of this species from Victoria West, obtained by Mr. R. M. Lightfoot; it appears to have been hitherto known only from the unique type in the British Museum.
- *44. *Platysaurus guttatus* Smith; Cat. Liz. ii. p. 262.
45. *Chamæsaura ænea* (Fitzing.); Cat. Liz. ii. p. 263.
46. *Chamæsaura didactyla* Bouleng., Proc. Zool. Soc. 1890, p. 82, pl. xi. fig. 1.
47. *Chamæsaura anguina* (Linn.); Cat. Liz. ii. p. 264.
48. *Chamæsaura macrolepis* (Cope); Cat. Liz. ii. p. 264.

FAMILY IV.—VARANIDÆ.

49. *Varanus albigularis* (Daud.); Cat. Liz. ii. p. 307.
50. *Varanus niloticus* (Linn.); Cat. Liz. ii. p. 317.

FAMILY V.—AMPHISBÆNIDÆ.

- *51. *Amphisbæna violacea* Peters; Cat. Liz. ii. p. 446.
- *52. *Amphisbæna quadrifrons* Peters; Cat. Liz. ii. p. 447
53. *Monopeltis capensis* Smith; Cat. Liz. ii. p. 455.

FAMILY VI.—LACERTIDÆ.

54. *Tropidosaura montana* (Gray); Cat. Liz. iii. p. 51.
55. *Nucras tessellata* (Smith); Cat. Liz. iii. p. 52
56. *Nucras delalandii* (M.-Edw.); Cat. Liz. iii. p. 53.
57. *Ichnotropis capensis* (Smith); Cat. Liz. iii. p. 78.
58. *Ichnotropis squamulosa* Peters; Cat. Liz. iii. p. 79.
- *59. *Eremias lugubris* (Smith); Cat. Liz. iii. p. 84.
60. *Eremias suborbitalis* Peters; Cat. Liz. iii. p. 90.

61. *Eremias namaquensis* Dum. and Bibr. ; Cat. Liz. iii. p. 91.
- *62. *Eremias undata* (Smith) ; Cat. Liz. iii. p. 92.
63. *Eremias pulchella* Gray ; Cat. Liz. iii. p. 93.
- *64. *Eremias lineo-ocellata* Dum. and Bibr. ; Cat. Liz. iii. p. 94.
- *65. *Eremias burchellii* Dum. and Bibr. ; Cat. Liz. iii. p. 95.
66. *Eremias capensis* (Smith) ; Cat. Liz. iii. p. 96.
67. *Scapteira knoxii* (M.-Edw.) ; Cat. Liz. iii. p. 109.
68. *Scapteira depressa* (Merr.) ; Cat. Liz. iii. p. 110.
69. *Scapteira serripes* (Peters) ; Cat. Liz. iii. p. 111.
70. *Scapteira ctenodactyla* (Smith) ; Cat. Liz. iii. p. 115.
- *71. *Scapteira cuneirostris* Strauch ; Cat. Liz. iii. p. 116.

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74. *Gerrhosaurus typicus* (Smith) ; Cat. Liz. iii. p. 123.
75. *Tetradactylus seps* (Linn.) ; Cat. Liz. iii. p. 124.
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77. *Tetradactylus africanus* (Gray) ; Cat. Liz. iii. p. 125.
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79. *Cordylosaurus subtessellatus* (Smith) ; Cat. Liz. iii. p. 126.

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- *80. *Mabuia stangeri* (Gray) ; Cat. Liz. iii. p. 157.
81. *Mabuia homalocephala* (Wiegman) ; Cat. Liz. iii. p. 170.
82. *Mabuia peringueyi* Boulenger, Ann. Mag. N. H. (6) ii. p. 139 (1888).—The cotype from Damaraland presented by Dr. Marloth is preserved in the Museum.
- *83. *Mabuia gruetzneri* (Peters) ; Cat. Liz. iii. p. 171.
- *84. *Mabuia trivittata* (Cuv.) ; Cat. Liz. iii. p. 195.

85. *Mabuia occidentalis* (Peters) ; Cat. Liz. iii. p. 196.
86. *Mabuia varia* (Peters) ; Cat. Liz. iii. p. 202.
87. *Mabuia chimbana* Bouleng. ; Cat. Liz. iii. p. 204.
88. *Mabuia striata* (Peters) ; Cat. Liz. iii. p. 204.
89. *Mabuia sulcata* (Peters) ; Cat. Liz. iii. p. 206.
90. *Mabuia acutilabris* (Peters) ; Cat. Liz. iii. p. 208.
91. *Lygosoma sundevallii* (Smith) ; Cat. Liz. iii. p. 307.
92. *Ablepharus wahlbergii* (Smith) ; Cat. Liz. iii. p. 350
*93. *Scelotes capensis* (Smith) ; Cat. Liz. iii. p. 412.
*94. *Scelotes tridactylus* Bouleng. ; Cat. Liz. iii. p. 413.
*95. *Scelotes caffer* (Peters) ; Cat. Liz. iii. p. 413.
96. *Scelotes bipes* (Linn.) ; Cat. Liz. iii. p. 414.
*97. *Scelotes quentheri* Bouleng. ; Cat. Liz. iii. p. 414.
*98. *Scelotes inornatus* (Smith) ; Cat. Liz. iii. p. 415.
99. *Scelotes arenicola* (Peters) ; Cat. Liz. iii. p. 415.
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103. *Acontias meleagris* (Linn.) ; Cat. Liz. iii. p. 427
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105. *Acontias lineatus* Peters ; Cat. Liz. iii. p. 428.
106. *Acontias grayi* (Bouleng.) ; Cat. Liz. iii. p. 428.
107. *Typhlacontias punctatissimus* Bocage ; Cat. Liz. iii. p. 429.

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- *113. *Chamæleon gutturalis* Smith ; Cat. Liz. iii. p. 457.
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115. *Chamæleon pumilus* Daud. ; Cat. Liz. iii. p. 458.
116. *Chamæleon ventralis* Gray ; Cat. Liz. iii. p. 459.
- *117. *Chamæleon damaranus* Bouleng. ; Cat. Liz. iii. p. 460.
118. *Chamæleon namaquensis* Smith ; Cat. Liz. iii. p. 462.

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4. *Rana fuscigula* Dum. and Bibr. ; Cat. Bat. Sal. p. 50.
- *5. *Rana angolensis* Bocage ; Cat. Bat. Sal. p. 50.
- *6. *Rana oxyrhynchus* Smith ; Cat. Bat. Sal. p. 51.
- 7 *Rana grayi* Smith ; Cat. Bat. Sal. p. 53.
8. *Rana fasciata* (Tschudi) ; Cat. Bat. Sal. p. 54.
- *9. *Rana quecketti* Bouleng., Proc. Zool. Soc. 1894, p. 643,
pl. xxxix. fig. 1 [Natal].
10. *Helophryne purcelli*, gen. et sp. nov. (see below).
- *11. *Phrynobatrachus natalensis* (Smith) ; Cat. Bat. Sal. p. 112.
- *12. *Phrynobatrachus ranoides* Bouleng., Proc. Zool. Soc. 1894,
p. 644, pl. xxxix., fig. 2 [Natal].
13. *Arthroleptis wahlbergii* Smith ; Cat. Bat. Sal. p. 117.
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15. *Rappia horstockii* (Schleg.) ; Cat. Bat. Sal. p. 120.
16. *Rappia marmorata* (Rapp.) ; Cat. Bat. Sal. p. 121.
- *17. *Rappia tuberilinguis* (Smith) ; Cat. Bat. Sal. p. 125.
- *18. *Rappia cinctiventris* (Cope) ; Cat. Bat. Sal. p. 126.
- *19. *Rappia pusilla* (Cope) ; Cat. Bat. Sal. p. 127.
20. *Megalixalus spinifrons* (Cope) ; Cat. Bat. Sal. p. 130.
- *21. *Cassina senegalensis* (Dum. and Bibr.) ; Cat. Bat. Sal. p. 131.
22. *Cassina wealii* Bouleng. ; Cat. Bat. Sal. p. 131.
23. *Hylambates natalensis* (Smith) ; Cat. Bat. Sal. p. 135.

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- *24. *Phrynomantis bifasciata* (Smith) ; Cat. Bat. Sal. p. 172.
25. *Breviceps gibbosus* (Linn.) ; Cat. Bat. Sal. p. 176.
26. *Breviceps verrucosus* Rapp. ; Cat. Bat. Sal. p. 177.
27. *Breviceps mossambicus* Peters ; Cat. Bat. Sal. p. 177.
28. *Hemisus guttatum* (Rapp.) ; Cat. Bat. Sal. p. 178.
29. *Cacosternum nanum* Bouleng., Ann. Mag. N. H. (5) xx. p. 52 (1887).

FAMILY III.—BUFONIDÆ.

30. *Bufo regularis* Reuss ; Cat. Bat. Sal. p. 298.
31. *Bufo angusticeps* Smith ; Cat. Bat. Sal. p. 300.
32. *Bufo carens* Smith ; Cat. Bat. Sal. p. 301.

FAMILY IV.—DACTYLETHRIDÆ.

33. *Xenopus laevis* (Daud.) ; Cat. Bat. Sal. p. 456.
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PART II.—DESCRIPTIONS OF NEW SPECIES.

GRAYIA LUBRICA, sp. nov.

Plate, fig. 1, 1a.

Rostral broader than deep just visible from above, internasals longer than broad, longer than the præfrontals; frontal about twice as long as broad, longer than its distance from the end of the snout, considerably shorter than the parietals; loreal longer than deep; one præ- two postoculars; temporals 1 + 2; upper labials eight, fourth and fifth entering the eye; four lower labials in contact with the anterior chin-shields which are about the same length as the posterior; scales in 19 rows on the anterior part of the body; ventrals 177; anal undivided; tail in the unique specimen incomplete so that the number of subcaudals cannot be given.

Colour, dark shining black above, a narrow yellow line on either side of head behind the eye; below yellow with a narrow ill-defined dark line running the whole length of the body along the centre of the ventrals. The two outer rows of scales spotted and blotched with black.

Length of type, 800 mm.; with tail complete would doubtless reach 1,000 mm.

The colouration and general appearance of this snake differs considerably from that of *Grayia smythii*, from which it further differs in the number and arrangement of the temporal and upper labial shields, the higher number of ventrals and the undivided anal.

From another species described by Dollo (Bull. Mus. Belg. iv. 1886, p. 158) as *Grayia giardi*, the present species differs in the number of its postoculars described in that form as being three in number, but the description given is too inadequate to make a thorough comparison between the two forms.

The type and unique specimen (Register No. 2,009) was obtained by Mr. M. Watermeyer at Tsomo in the Transkei district of the eastern part of Cape Colony, and is preserved in the South African Museum. The genus is new to South Africa; the other species are *G. smythii* from West Africa and Angola, *G. furcata* from the Congo district, and *G. giardi* from Lake Tanganyika.

ELASMODACTYLUS NAMAQUENSIS, sp. nov.

Plate, fig. 2, 2a, 2b.

Body stout, limbs short; head longer than broad, depressed, quite distinct from the neck; snout obtuse, longer than the distance of eye

to ear-opening, not quite twice the diameter of the ear-opening; ear-opening slightly oval, its greatest diameter half that of the eye, upper part of the snout covered with granules larger than those of the occiput, and having no markedly larger tubercles interspersed among them; nostril pierced between the rostral, the first labial and three other small scales; rostral rather broader than deep, no median cleft, upper margin scalloped; ten upper and ten lower labials; mental large with rounded posterior border, no chin-shields; throat covered with small granules; body, limbs, and tail covered with granules and tubercles of unequal sizes, the latter fairly evenly distributed, and becoming more conical and pointed on the hinder part of the body, the limbs and tail; vertebral line with no tubercles; belly covered with subquadrangular small smooth scales, juxtaposed but not imbricate; digits of moderate size, not very unequal in length, the distal joint being dilated into an ovate disc on the upper surface of which are two enlarged scales which protect the pouch into which the very minute claws can be retracted, under surface of the toes with a series of transverse lamellæ, the number on the median toe of the hind foot being thirteen.

Colour.—Above grey with traces of darker spots, some of the large tubercles being black, traces of transverse bands on the tail, below uniform dirty white.

Measurements.—From snout to vent, 80 mm.; tail, 60 mm.; head, 22 mm.; width of head, 16 mm.; fore limb, 28 mm.; hind limb, 33 mm.

This species of Gecko differs from *Elasmodactylus tuberculosus*, Boulenger,* the only species of the genus hitherto described in the slightly different arrangement of the plates round the nostrils, in having dorsal tubercles more widely scattered and more distinct in size, and in their being conical and pointed on the posterior part of the body, also in the number of transverse lamellæ beneath the toes.

The type of this species (No. 935 of the Museum register) was obtained in Namaqualand, in the Colony, by Mr. W. C. Scully, and there also exists in the Museum a second specimen, of which, however, the history is unfortunately unknown.

The genus is new to South Africa, the only other species of the genus, *E. tuberculosus* above referred to, having been obtained in the Lower Congo district.

HELEOPHRYNE, nov. gen., Ranidæ.

Pupil vertical. Tongue free rounded behind. Vomerine teeth present. Tympanum not visible. Fingers free. Toes webbed to

* Proc. Zool. Soc. 1894, p. 727.

tips. Tips of fingers and toes dilated considerably into regular discs. Outer metatarsals separated from web.

This genus seems most allied to *Rhacophorus*, from which, however, it differs in possessing a vertical pupil and free fingers. From *Nyetibatrachus* and *Hylambetes* it differs in having a rounded tongue, and from *Cassina* in having dilated toes.

HELEOPHRYNE PURCELLI, gen. et sp. nov.

Plate, fig. 3, 3a.

Snout obtuse, about as long as the orbital diameter, canthus rostralis rounded, interorbital space a little broader than upper eyelid; tympanum not visible; fingers free, ending in broad, flat, somewhat truncate triangular expansions or discs. Toes completely webbed and discs well developed, but not quite so large as those of the fingers and less triangular; subarticular tubercles oval and fairly large, inner metatarsal tubercle oval and well developed, outer absent. The tibio-tarsal joint reaches the end of the snout if the hind limb be carried forward; skin smooth above, granular beneath, especially on the belly.

Vomerine teeth in two linear groups between the choanæ, as in *Rana grayi*; maxillary teeth present; tongue rounded behind.

Colour (in spirit) purplish with darker round, faintly white edged spots of the same colour; hind limbs cross-barred with darker purple bands below yellowish white.

The type and unique specimen (No. 1313 of the Museum register) was obtained by Dr. W. F. Purcell in the Jonkers Hoek Valley near Stellenbosch, and is now preserved in the Museum.

EXPLANATION OF PLATE V.

FIG.

1. *Grayia lubrica*, sp. nov., from above.
- 1a. " " " side view of head.
2. *Elasmodactylus namaquensis*, sp. nov., from above.
- 2a. " " " hind foot from above.
- 2b. " " " " from below.
3. *Heleophryne purcelli*, gen. et sp. nov.
- 3a. " " " mouth opened to show tongue and vomerine teeth.

Fig 1a



Fig 1



Fig 2



Fig 3a.



Fig. 3.



Fig. 2a



Fig. 2b



P.J.Smit del. et lith.

West Newnan imp

1. *Grayia lubrica*. sp. nov.
2. *Elasmodactylus namaquensis*. sp. nov.
3. *Heleophryne purcelli*. gen. et sp. nov.

IV.—*Catalogue of the South African Hispidæ (Coleoptera), with Descriptions of New Species.*—By L. PÉRINGUEY, Assistant Director.

GEN. LEPTISPA, Baly,
Catal. Hispid., 1858, p. 1.

Synopsis of Species.

Antennæ moderately long; prothorax with scattered punctures; elytra subchalybeate, fifth and sixth intervals raised at base *natalensis*.

Antennæ shorter, punctures of prothorax very closely set, elytra black, the series of punctures close to one another, sixth interval only raised at base *gracilis*.

LEPTISPA NATALENSIS, Baly,
Catal. Hispid., 1858, p. 3.

Hab. Natal (Malvern), G. A. K. Marshall, C. N. Barker.

LEPTISPA GRACILIS, n. sp.

Totally black, glabrous, moderately shining; antennæ short, one-half longer than the head, which is elongate and finely punctured; prothorax elongato-quadrate, slightly sinuate laterally from the median to the posterior part, truncate at both ends, slightly convex and covered with very closely set punctures; elytra subcylindrical, four times as long as the prothorax, deeply punctato-striate with the intervals very fine, the sixth one rounded and raised from the shoulder to one-fifth of the length. Length $5\frac{1}{4}$ mm.; width $\frac{3}{8}$ mm.

Hab. Cape Colony (Cape Town), Dr. F. Purcell.

GEN. CALLISPA, Baly,
Catal. Hispid., 1858, p. 4.

CALLISPA NIGRIPES, Baly,
Catal. Hispid., 1858, p. 9.

CALLISPA NATALENSIS, Baly,
Catal. Hispid., 1858, p. 9.

Hab. Zambesia (between the Limpopo and the Zambesi Rivers),
T. Ayres.

GEN. AMBLISPA, Baly,
Catal. Hispid., 1858, p. 10.

AMBLISPA AUSTRALIS, n. sp.

Black, moderately shining, glabrous; joints of antennæ closely set, intermediate ones of nearly equal length, the four ultimate ones a little wider; thorax narrowed and rounded from base to apex, convex and covered with large but not deep irregular punctures closely set; elytra not broader than the base of the prothorax, convex and covered with regular series of deep punctures separated by narrow, smooth intervals.

The facies of this species is very similar to that of *A. lævigata*, Guér., but the latter is dark blue instead of black, and the seriated punctures are much finer and shallower. Length $5\frac{1}{4}$ mm.; width $2\frac{3}{4}$ mm.

Hab. Zambesia (Salisbury), G. A. K. Marshall.

GEN. CRYPTONYCHUS, Gyllenh.,
Schönh., Syn. Ins., i. 3; App., 1817, p. 7.

CRYPTONYCHUS EXTREMUS, n. sp.

Black, with the prothorax, scutellum, and elytra yellow, the former with a very broad median longitudinal band; joints of antennæ short, massive, gradually increasing from base to apex and closely set; head faintly punctulate, and having a projecting, hollowed out, and rounded at tip process, being the continuation of a deep median groove beginning at the neck; this projecting process is about one-fourth of the total length of head and neck; prothorax quadrate, with the anterior angles slightly rounded, nearly straight in front but sinuate on each side of the base, with the basal angle

sharp, central part nearly smooth, lateral one covered with irregularly arranged, deep punctures; elytra not broader than the prothorax, nearly straight, but slightly ampliate past the median part; the surface is covered with a series of deep round punctures, separated by a narrow, smooth interval; legs punctulate. • Length 10 mm.; width 3 mm.

Hab. Natal (Pine Town), J. P. Cregoe, (Malvern) C. N. Barker, G. A. K. Marshall.

GEN. BALLYANA, n. g.

Allied to *Cœlænomenodera*, Blanch., and with a similar facies, but differentiated by the number of antennal joints, the five ultimate ones of which are completely fused into one not much longer than the two preceding, and the antennæ are thus only seven-jointed.

BALLYANA ALGOENSIS, n. sp.

Yellow, shining, with the head, antennæ, scutellum, under side, tarsi, and legs black, but the femora and tibiæ of the anterior pair are flavous; antennæ short, rigid, consisting of seven joints, the apical one not much longer than the two preceding put together and subfusiform; anterior part of prothorax produced in front in a long, obtuse triangle, outer sides slightly emarginate near the base, discoidal part with three raised lines connected by two transverse ones forming six broad impressions; elytra subparallel, elongate, having on each side three slightly wavy, raised lines, connected transversely by raised folds forming an irregular reticulation with broad and deep punctures between; tibiæ inflated inwardly, and with a short, supra-apical tooth externally. Length 9 mm.; width $3\frac{1}{2}$ mm.

Hab. Mozambique (Rikatla), Rev. H. Junod.

GEN. ONCOCEPHALA, Chevrol.,

D'Orbigny's Dict. Univ. Hist. Nat., ix., 1847.

ONCOCEPHALA PROMONTORII, n. sp.

Brown, variegated with a pale flavescent, glabrous, moderately shining, antennæ and under side black; head with a broad, much raised tubercle grooved in the centre and mamillate; prothorax subrectangular, with the apical part a little narrower than the rest, outer margins with two short teeth, the one apical, the other post-apical, surface irregularly punctured, disk with three grooves, the

median one of which is edged by two blunt tubercles on each side; elytra subquadrate, truncate behind, broader than the prothorax by one-third, with the shoulders sloping slightly and the outer margin curving slightly inward, irregularly and deeply punctured except along the outer margin, which has a regular series of very broad punctures, discoidal part with three series of elongate, not much raised and blunt wart-like tubercles tinged with black at apex, the outer one of which develops in a curved carina overhanging the shoulder; under side totally black. Length 4 mm.; width $2\frac{1}{2}$ mm.

Hab. Cape Colony (Port Elizabeth, Kowie, Grahamstown), Natal (Estcourt), A. E. Haviland, (Malvern) C. N. Barker.

Closely allied to *O. senegalensis*, yet distinct.

GEN. PLATYPRIA, Guér. Mener.,

Rev. Zool., 1840, p. 139.

PLATYPRIA MASHUNA, n. sp.

Pale yellow, shining, antennæ rufescent, with the two basal joints black; head black; prothorax broader than long, faintly impressed transversely along the base, pale yellow with four nearly always distinct black or fulvous round spots in the centre, provided on each side with a subvertical series of six sharp spines radiating from an alveolated process, the four median spines are long, tipped with black, the anterior and posterior ones are very short, and the angle of the base is also spiniform; elytra subquadrate, very deeply and broadly punctured, and having two discoidal series of black spines on each side, those on the median part longer than the others, and a marginal one the spines of which are still longer than the dorsal ones, the four sub-humeral spines of this marginal series are ramified at the base, and they are infusate at the tip, the fifth one is placed at some little distance from either those preceding or following, and is also infusate at the tip, while the post-median ones are quite black; the suture shows faint traces of spicules, and at the base of every dorsal spine there is a rounded black patch; under side deeply infusate, legs pale yellow. Length $7-7\frac{1}{2}$ mm.; width $4-4\frac{1}{2}$ mm.

The black dorsal patches on the back are sometimes obliterated.

Hab. Zambesia (Salisbury), G. A. K. Marshall.

PLATYPRIA TRANSVAALENSIS, n. sp.

In shape and length of the spicules it resembles altogether *P. mashuna*, but the size is always smaller, the colour of the upper part is testaceous, the black dorsal patches are broader in proportion to

the size and darker, and the whole of the four sub-humeral spines, and also the ramification from which they radiate are entirely black; under side and legs testaceous with the median part of the abdomen infuscated. Length $4\frac{1}{2}$ mm.; width 3 mm.

Hab. Transvaal (Leydenburg), T. Ayres.

PLATYPRIA CONNEXA, n. sp.

Testaceous brown, the two basal joints of the antennæ slightly infuscate, lateral spines of the prothorax disposed as in the two previous species, but not infuscate; in the basal transverse depression are two round black discoidal spots; elytra elongato-quadrate, deeply and broadly punctato-striate, and without any black patches; the lateral spines are disposed as in the two preceding species, but the spines are hardly infuscate except the posterior ones, which are darker brown at the tip, and those on the back are disposed from the median part to the apex in a duplicate series of three instead of only one long discoidal one past the middle with a few scattered spiculæ below it; under side testaceous. Length $4\frac{1}{2}$ mm.; width 3 mm.

Hab. Transvaal (Potchefstroom), T. Ayres.

GEN. PODISPA, Chap.,

Lacordaire's Genera, vol. xi. p. 334.

PODISPA EXTREMA, n. sp.

Blue-black, shining, briefly pubescent; antennæ slightly longer than the head and prothorax with the joints closely set and spinulose, the basal one with five moderately long but conspicuous outer spines, the second one with two shorter ones at the base; prothorax subelongate, somewhat narrowed in the anterior part, deeply grooved longitudinally in the centre with the median part of the disk raised on each side; anterior margin bearing on each side of the suture four long spines borne on one stalk, the two anterior ones of which are directed forward, and the other two are shorter and nearly vertical, outer margin with a bifid process (the anterior one of which bears two, and the posterior one three spines), and a small vertical spine set at a short distance from the bifid process, and quite disconnected with it; elytra elongate, parallel, punctato-striate, and having on each side four dorsal rows of sharp, not very long spines, closely set, and a marginal one of equally long but more closely set spines; legs spinulose outwardly. Length 5 mm.; width $2\frac{1}{2}$ mm.

Hab. Cape Colony (Prieska), Dr. F. Purcell; Natal (Malvern), C. N. Barker.

GEN. HISPELLA, Chap.,
Lacordaire's Genera, vol. xi. p. 334.

Synopsis of Species.

Elytra bronze, shining, spines moderately long *spuria*.
Elytra blue-black, moderately shining, spines short *promontorii*.

HISPELLA SPURIA, n. sp.

Black, nearly glabrous, elytra with a bright bronze sheen; antennæ hardly longer than the head and prothorax, joints closely set, the basal one with a long, setiform spine on the outward apical part, third joint as long as the first, but not quite so broad; prothorax longer than broad, attenuate in front, deeply grooved in the centre with the discoidal part raised on each side, anterior margin with long, divaricating spines, one on each side of the median groove, outer margin with three long spines, the two anterior ones springing from one stalk; elytra linear, one-third wider than the prothorax, deeply seriato-foveolate and having on each side three dorsal rows of moderately long spines and a marginal one of similar but more closely set spines. Length 5 mm.; width $2\frac{3}{4}$ mm.

Hab. Natal (Malvern), C. N. Barker; Estcourt, A. E. Haviland; Transvaal (Potchefstroom), T. Ayres.

HISPELLA PROMONTORII, n. sp.

Very closely allied to the preceding species but one-third smaller; the colour is bluish black instead of bronze, but the spines of the anterior margin and also those of the elytra are much shorter in proportion, and also more closely set; the basal spine of the first joint of antennæ is longer, and the third joint is shorter. Length 4 mm.; width $2-2\frac{1}{2}$ mm.

Hab. Cape Colony (Cape Town, Stellenbosch).

GEN. HISPA, Linn.,
Syst. Nat., ed. xii., 1767, p. 603.

Synopsis of Species.

FIRST DIVISION.

MEDIAN PART OF ANTERIOR MARGIN OF PROTHORAX SPINOSE,
LATERAL MARGINS WITH THREE SEPARATE SPINES.

A⁴.—ANTERIOR MARGIN OF PROTHORAX WITH TWO PERPENDICULAR
SPINES HAVING A SHARP, SPINIFORM PROCESS NEAR THE BASE.

Black, glabrous shining, third joint of antennæ as long as the three following *sobrina*.

A³.—ANTERIOR MARGIN OF PROTHORAX WITH FOUR MEDIAN THE TWO ANTERIOR ONES HORIZONTAL, THE POSTERIOR ONES SPINES, VERTICAL AND SHORTER THAN THE ANTERIOR; BODY BLACK.

*b*². Body slender; elytra one-third broader than the prothorax.

*c*². Black, opaque, nearly glabrous; elytra costulate *capicola*.

*c*¹. Black, opaque, pubescent; elytra not costulate *gracilis*.

*b*¹. Body not very slender.

*c*². Sub-ænescent; spines on the elytra long, not closely set *tenella*.

*c*¹. Black; spines on the elytra closely set *zulu*.

A².—ANTERIOR MARGIN OF PROTHORAX WITH TWO BIFID, PERPENDICULAR SPINES, THE ANTERIOR PROCESS OF WHICH IS SHORTER THAN THE POSTERIOR; BODY BROWN OR FLAVESCENT; ELYTRA NEARLY TWICE AS BROAD AS THE THORAX.

*b*². Antennæ long.

*c*². The two basal joints infusate or black.

*d*². The four penultimate joints of antennæ sub-moniliform; prothorax with a denuded areolet on each side; elytra sub-æneous *congrua*.

*d*¹. The four penultimate joints of antennæ elongate; prothorax without any areolet; elytra not sub-æneous *dissimilis*.

*c*¹. The two basal joints of antennæ not infusate.

*d*³. Antennæ slender; elytra with bronzed patches, spines entirely black *gratula*.

*d*². Antennæ slender; elytra flavescent, spines black at tip.. .. . *pubicollis*.

*d*¹. Antennæ thick; elytra flavous, dorsal spines black *inanis*.

*b*¹. Antennæ short.

*c*². Elytra with three series of short spines *perfidæ*.

*c*¹. Elytra with four series of short spines *ambigua*.

A¹.—ANTERIOR MARGIN OF PROTHORAX WITH TWO BIFID PERPENDICULAR SPINES, LATERAL MARGINS WITH THREE SEPARATE SPINES, THE ANTERIOR OF WHICH IS BIFID, AND THE MEDIAN ONE TRIFID *litigiosa*.

SECOND DIVISION.

ANTERIOR MARGIN OF PROTHORAX NOT SPINOSE, LATERAL MARGINS WITH SPINES.

A².—LATERAL MARGINS WITH A SHORT STALK SUPPORTING FOUR VERTICAL SPINES AND A DETACHED SPINE BEHIND THE STALK, AND NOT CONNECTED WITH IT; ELYTRA BLACK OR BRONZE.

*b*². Antennæ long and very slender; elytra with two dorsal rows of long spines *natalica*.

*b*⁴. Antennæ long and slender; elytra with three dorsal rows of long spines *vexatrix*.

*c*². Antennæ moderately long but not slender; elytra with three dorsal rows of short spines *torulosa*.

*c*⁴. Antennæ moderately long but not slender; elytra with four dorsal rows of short spines *ovampoæ*.

A¹.—LATERAL MARGINS WITH A SHORT STALK SUPPORTING FIVE OR SIX SPINES OR MORE, NO DETACHED SPINE BEHIND THE STALK.

*b*⁵. Lateral process consisting of six sub-vertical spines, the posterior one of which is bifid.

*c*³. The five or six basal joints of antennæ black; elytra with three rows of dorsal spines. *vicinalis*.

*c*². Basal joints of antennæ not black; elytra with five rows of dorsal spines *omarramba*

*c*⁴. All the joints of antennæ of nearly the same width and length; elytra with three rows of dorsal spines. *perplexa*.

*b*⁴. Lateral process, consisting of six sub-horizontal spines, the posterior of which is bifid.

*c*². Antennæ short, massive.

*d*⁴. Elytra straw colour, spines on elytra black *straminea*.

*c*⁴. Antennæ long, slender.

*d*³. Elytra black *decipiens*.

*d*². Elytra reddish brown *capensis*.

*d*⁴. Elytra dark brown on the dorsal part, with the lateral and posterior margins flavescent *delicata*.

*b*³. Lateral process consisting of five sub-vertical spines, the posterior of which is bifid.

Antennæ long, slender; elytra flavous with infusate spines .. *eximia*.

Antennæ with the six basal joints very short and nodose, the other five thick and longer than the six basal ones; elytra rufescent *fallaciosa*.

*b*². Lateral process consisting of five vertical spines, the posterior one of which is not bifid.

Body covered with a dense, silky, yellow pubescence *lanigera*.

*b*¹. Lateral process consisting of nine horizontal spines, the posterior one of which is bifid. *ramulosa*.

HISPA SOBRINA, n. sp.

Black, glabrous, very shiny; antennæ long, not slender, the seven ultimate joints not moniliform, third one as long as the three following, the five ultimate ones sericeous; thorax very rugosely alveolate, and without any denuded space, but with a slight depression in the middle of the anterior part; elytra elongate, twice as broad as the prothorax, deeply seriato-foveate, with the foveæ shining, and having on each side two series of stout, not closely set, short spines, with two stout spines between the first and second dorsal rows, one at about the middle the other at the apex, marginal row consisting of moderately closely set spines a little more slender than the dorsal ones. Length $5\frac{1}{2}$ mm.; width $2\frac{1}{4}$ mm.

Allied to *H. spinulosa*, from the West Coast of Africa, but at once distinguished by the more massive antennæ and the shape of the spines in the anterior margin of the prothorax, which are strongly bifid in *H. spinulosa*, whereas in *H. sobrina* the anterior part of the process is quite minute.

Hab. Natal (Malvern), G. A. K. Marshall.

HISPA CAPICOLA, n. sp.

Linear; black, opaque, nearly glabrous; antennæ moderately slender, basal joint very thick, the five following narrow, third one a little longer than the fourth, the five ultimate ones moderately thickened and pubescent; discoidal raised parts of the thorax smooth and very distinct; elytra deeply foveate, and with three dorsal series of short spines on each side, and a marginal one, the spines of which are not longer than the dorsal ones; the first interval along the suture has a slightly raised, somewhat spinose line, the spines of which are more developed in the posterior part. Length $4\frac{1}{2}$ – $5\frac{1}{2}$ mm.; width 2 – $2\frac{1}{4}$ mm.

Hab. Cape Colony (Cape Town, Stellenbosch, Worcester).

HISPA GRACILIS, n. sp.

Linear ; black, opaque, and covered with a very brief, silky white pubescence ; antennæ moderately long, basal joint very thick, angular outwardly, third joint hardly longer than the fourth, the four penultimate ones thickened, submoniliform and sericeous, apical joint also sericeous ; raised discoidal patches of the prothorax not very prominent and partly hidden by a very short pubescence ; elytra punctate and having on each side three dorsal series of short, closely set spines, the intervals of which are spinose in the posterior part, and a marginal one consisting of short, closely set spines not longer than the dorsal.

Allied to the preceding species, but still narrower, and pubescent instead of being nearly glabrous. Length $4\frac{1}{2}$ mm. ; width 2 mm.

Hab. Natal (Estcourt), A. E. Haviland ; Zambesia (Salisbury), G. A. K. Marshall.

The examples from Salisbury are more densely pubescent than those from Estcourt.

HISPA TENELLA, n. sp.

Black, sparsely pubescent on the thorax ; antennæ long, first and second joints thick, the basal one longer than the second by half, third to sixth inclusive slender and of equal length, seventh to eleventh thickened and pubescent, the three penultimate ones submoniliform ; thorax without any spherical raised patches, but with the discoidal part denuded longitudinally ; elytra one-third broader than the thorax, covered with a series of moderately broad punctures and having three dorsal and one marginal series of moderately long spines set at some distance from one another. Length 3 mm.

Hab. Zululand (Eshowe).

HISPA ZULU, n. sp.

Black, glabrous ; antennæ moderately long, first joint thick, second one half the length and width of the preceding one, third to sixth inclusive, slender and of equal length, seventh to eleventh thickened, very closely set and pubescent ; thorax with two raised but not very distinct discoidal spaces, anterior and lateral spines closely set and long ; elytra one-third broader than the thorax, deeply punctured and having on each side three dorsal series of closely set short spines and a marginal one, the spines of which are closely set, as long as the dorsal, but more slender. Length $3\frac{1}{2}$ mm. ; width $1\frac{1}{3}$ mm.

Hab. Zululand (Eshowe).

HISPA CONGRUA, n. sp.

X
Light brown, with a slight bronze tinge, spines black, legs flavous; antennæ flavescent, with the two, and sometimes the three basal joints infusate, first joint moderately long, more than twice as long as the second one, third to sixth moderately slender, third one-third longer than the fourth, the five ultimate ones twice as thick as the intermediate, pubescent, the three penultimate ones not much longer than broad; thorax pubescent, narrowly grooved longitudinally in the centre and with a small denuded areolet on each side; elytra nearly twice as broad as the prothorax, glabrous and having on each side three dorsal rows of moderately long spines, and a few short spines along the suture; the spines of the outer margin are not closely set and are nearly as long as the dorsal ones. Length 4 mm.

Hab. Natal (Durban), C. N. Barker.

HISPA DISSIMILIS, n. sp.

Light brown, without any bronze tinge; antennæ long, flavescent with the two basal joints black or deeply infusate, third joint one-third as long as the fourth, the last five joints one-fourth thicker than the intermediate ones which are slender and pubescent; thorax pubescent, grooved longitudinally in the middle and with an impression on each side of the groove, spines light brown; elytra light reddish brown with the spines black and an æneous dark patch at their base, twice as broad as the thorax, foveate, and with three dorsal series, and a marginal one on each side, of long, dark brown spines distant from one another; legs flavescent.

Allied to the preceding species and mainly distinguished, apart from the colour, by the more elongated intermediate joints of the antennæ, the penultimate joints are also less submoniliform. Length $4\frac{3}{4}$ –5 mm.; width $2\frac{3}{4}$ –3 mm.

Hab. Natal (Malvern), C. N. Barker; (Port Shepstone), G. A. K. Marshall; (Frere), A. E. Haviland.

HISPA GRATULA, n. sp.

Light bronze, with a flavescent tinge; antennæ flavescent, very long and very slender, the two basal joints light brown, third joint one-third longer than the fourth, the five ultimate sericeous, elongate, the two penultimate ones sub-moniliform; prothorax and spines sub-flavescent, briefly pubescent, very faintly grooved longitudinally in the middle, and having on each side a diagonal, narrow, denuded, elongated patch, elytra foveolate, clothed with a very brief, scattered pubescence, and having two dorsal series of

moderately long dark spines, set at some distance from one another with two shorter spines on the posterior part, between the first and second rows; the suture is also spinulose, and the spines of the marginal row are more closely set than the dorsal but of equal size; legs flavescent. Length 4 mm.; width 2 mm.

Hab. Natal (Malvern), G. A. K. Marshall.

HISPA PUBICOLLIS, Chap.,

Ann. d. Belg., 1877, p. 55.

HISPA INANIS, n. sp.

Flavous, with the dorsal spines of the elytra and the space edging the diagonal smooth spaces of the prothorax infusate; antennæ long but not slender, third joint longer than the fourth, and the five ultimate ones thicker than the intermediate ones; thorax very nearly glabrous, faintly grooved longitudinally in the middle, and having on each side a long, arcuate, smooth space; elytra nearly twice as broad as the prothorax, foveolate, glabrous, and having on each side two series of distant, moderately long spines, with two isolated ones in the second interval and two set close to one another between the second row and the outer margin in the posterior part, spines of the outer margin long and closely set. Length $4\frac{1}{4}$ mm.; width $2\frac{1}{5}$ mm.

Hab. Natal (Malvern), G. A. K. Marshall.

HISPA PERFIDA, n. sp.

Bronze, with a reddish brown tinge; antennæ short, thick, the four basal joints black or dark fuscous, all the joints with the exception of the third one, which is a little longer, nearly one-third longer than wide, and closely set; prothorax with a few squamiform hairs, narrowly grooved longitudinally in the centre, and having on each side of the groove a round, conspicuous, raised, denuded space; elytra glabrous, foveolate, twice as broad as the prothorax, and having three rows on each side of short, black spines, very thick at base and closely set, spines of marginal row more slender than the dorsal ones, but of equal length; legs reddish brown. Length $4\frac{1}{2}$ – $5\frac{1}{5}$ mm.; width $2\frac{1}{2}$ –3 mm.

Hab. Natal (Malvern), G. A. K. Marshall, C. N. Barker.

HISPA AMBIGUA, n. sp.

Buff colour, but occasionally infusate; antennæ short, joints thick, closely set, third one nearly twice as long as the fourth, the five ultimate joints one-fourth thicker than the intermediate ones,

sericeous and flavescent; thorax briefly pubescent, and provided with a fine longitudinal median line and a round raised space on each side, partly hidden by the pubescence; elytra light brown but sometimes infusate, deeply seriato-punctate, very briefly and sparsely pubescent, and having on each side four dorsal rows of very short spines, the spines of the marginal row are black, closely set, moderately long, but longer than those in the dorsal series where there are minute ones alternating with the longer ones; legs light brown. Length $3-3\frac{1}{4}$ mm.; width $1\frac{1}{2}-1\frac{3}{5}$ mm.

Chiefly distinguished from *H. ambigua* by the smaller size and little more slender facies, the less developed raised discoidal spaces; the series of spines on the dorsal part of the elytra are denser, and four in number instead of three.

Hab. Transvaal (Klerksdorp), E. G. Alston.

X
HISPA LITIGIOSA, n. sp.

Flavous, glabrous, with the six basal joints of antennæ, two discoidal patches on the prothorax, two on the scutellum, and the dorsal spines on the elytra black; antennæ long, moderately slender, with the five apical joints not much thicker than the intermediate ones, third and fourth joints of nearly equal size; prothorax closely punctured and with a sparse, squamiform pubescence, discoidal part without any raised space, but having instead two moderately broad, longitudinal black patches; elytra foveolate and having two dorsal rows of long, sharp spines distant from one another, and two or three spines in the intervals in the posterior part; spines of marginal row more slender than the dorsal and also more closely set, scutellum with two fuscous patches, one on each side of the base; legs straw colour. Length $4\frac{1}{2}-5\frac{1}{5}$ mm.; width $2\frac{1}{4}-2\frac{1}{2}$ mm.

Hab. Natal (Malvern), G. A. K. Marshall; Zululand (Eshowe), A. Windham.

Two species belonging to this first division have been described by Chapuis, but I have not as yet met with them.

HISPA MAMILLATA, Chap.,
Ann. d. Belg., 1877, p. 56.

HISPA TENUICORNIS, Chap.
Ann. d. Belg., 1877, p. 56.

HISPA NATALICA, n. sp.

Black, very shining, glabrous; antennæ long, slender, the five ultimate joints thickened, elongate, clothed with a flavescent, short

pubescence, while the others are nearly glabrous, the third joint is a little longer than the fourth; prothorax nearly smooth, faintly impressed in the centre, the impression smooth; elytra deeply seriatopunctate, and having on each side two rows only of dorsal spines far distant from one another and a marginal one of equal length, but more closely set; the hind spine on the lateral margin of the prothorax is much shorter than those on the stalk. Length 5 mm.; width $2\frac{1}{5}$ mm.

Hab. Natal (Maritzburg).

HISPA VEXATRIX, n. sp.

Black, with a faint bluish tinge, shining, glabrous; closely allied to the preceding species, the description of which applies also to the present one; it is, however, differentiated by the number of dorsal series of spines on the elytra, which is three instead of two, and the lateral spine of the margin of the prothorax is longer than the spines on the stalk instead of being much shorter. Length 5 mm.; width $2\frac{1}{5}$ mm.

Hab. Natal (Eshowe).

HISPA TORULOSA, Chap.,

Ann. d. Belg., 1877, p. 52.

Hab. Transvaal (Potchefstroom), Zambesia (Salisbury).

HISPA OVAMPOA, n. sp.

Dark brown, with a bronze tinge, very shining, glabrous; antennæ moderately long and thick, third joint short, but twice the length of the fourth, the three following of equal size, the five ultimate ones thickened, short, closely set, and sericeous; prothorax deeply and closely punctured and having on each side a smooth space next to the spinose stalk and the posterior spine, and a longitudinal median line; the hind spine is much shorter than those on the stalk; elytra having on each side four dorsal rows of short spines set somewhat closely, and a marginal one of similar spines. Length 5 mm.; width 2 mm.

Hab. Ovampoland (Omarramba), A. W. Eriksson.

HISPA VICINALIS, n. sp.

Reddish brown, covered with a long pubescence; antennæ moderately long, with the six basal joints moderately slender and the five ultimate ones nearly twice as thick, and the four penultimate ones submoniliform; the four basal joints and sometimes the fourth and

sixth are black or infusate; and the others flavescent; prothorax densely pubescent and with a narrow, denuded longitudinal band; elytra seriato-punctate, clothed with a long but not dense pubescence, and having on each side three dorsal rows of long, not closely set dark spines and a marginal one, the spines of which are as long as the dorsal, but more closely set; legs reddish brown, pubescent. Length $3-3\frac{1}{4}$ mm.; width 2 mm.

Hab. Natal (Verulam), G. A. K. Marshall, (Malvern), C. N. Barker; Transvaal (Leydenburg), T. Ayres; Zambesia (Salisbury), G. A. K. Marshall.

HISPA OMARRAMBA, n. sp.

Chestnut-red, clothed with a dense, flavescent pubescence; basal joints of the antennæ chestnut-brown, second to sixth, inclusive, closely set, the five apical ones thickened, seventh nearly twice as long as the eighth; prothorax similar to that of the two preceding species, but the pubescence is more conspicuous; elytra seriato-punctate and having five dorsal rows of long, sharp spines more closely set in the posterior than in the anterior part, spines of the intermediate rows not quite so numerous as in the second and third, except behind, spines of the marginal row long and closely set.

This species differs from the two preceding ones by the thicker and more yellow pubescence, and also by the intervals between the suture, and the dorsal series of spines being spinose. Length 4 mm.; width $2\frac{1}{4}$ mm.

Hab. Ovampoland (Omarramba), Eriksson.

HISPA PERPLEXA, n. sp.

Light chestnut-red, clothed with a long, dense, whitish pubescence; antennæ moderately short, with the joints closely set and of nearly equal length with the exception of the basal one, the third is not much longer than the fourth, which is of nearly the same size as the second, all the basal and intermediate joints are clothed with short, dense greyish hairs, the five ultimate ones are sericeous; thorax with a narrow, longitudinal denuded space in the centre, all the rest partially hidden by the decumbent pubescence; scutellum entirely hidden by the pubescence; elytra foveolate and with three dorsal rows of spines set far apart, the marginal row consists of spines as long as the dorsal ones, but closely set; the intervals between the spines on the outer margins of the prothorax are setulose. Length $5\frac{1}{4}-5\frac{1}{2}$ mm.; width 3 mm.

Hab. Transvaal (Leydenburg), T. Ayres; Zambesia (Middle Limpopo, Victoria Falls), Dr. Bradshaw.

HISPA STRAMINEA, n. sp.

Light straw colour, glabrous, shining, spines of the prothorax infusate for half the length, those of the elytra black nearly to the base; antennæ moderately short and massive, with the joints closely set, the five apical ones thickened and about one-third wider than the two preceding ones, third a little longer than the fourth; prothorax deeply punctate; elytra deeply and closely foveolate and having on each side three series of long and slender spines, the suture spinulose, spines of the outer margin as long as the dorsal ones and more closely set; spines of the prothorax very long and sub-horizontal. Length 4 mm.; width $2\frac{1}{2}$ mm.

Hab. Cape Colony. Exact locality unknown.

HISPA CAPENSIS, Thunb.,

Nov. Ins. spec. iii., p. 66, fig. 76.

Hab. Cape Colony (Port Elizabeth).

HISPA DECIPIENS, n. sp.

Black, shining, glabrous on the elytra, but with the prothorax clothed with a very short, squamiform pubescence; antennæ long, intermediate joints narrow and of nearly equal length, the five ultimate joints much thickened, the three penultimate ones moniliform, the apical one a little wider at base than the preceding one; spines of the lateral process of the prothorax very long and sub-horizontal, discoidal part with a very narrow longitudinal groove; elytra deeply foveate and having on each side four series of long, slender spines, and a marginal one of equally long but more closely set ones. Length 4 mm.; width $2\frac{1}{4}$ mm.

Hab. Cape Colony (? Worcester).

HISPA DELICATA, n. sp.

Black or very deeply infusate on the upper side, posterior and lateral margins of elytra sub-flavescent, antennæ and legs also flavescent, dorsal spines on the elytra dark, those on the lateral margins and on the prothorax flavescent but darker at tip; antennæ very long, the four intermediate joints very slender, third, fourth, and fifth of nearly equal length, the five ultimate ones thickened and about twice as long as broad; prothorax very nearly glabrous, spines of the lateral process very long, slender and horizontal; elytra deeply seriato-punctate and having on each side three dorsal rows of very long and slender spines not closely set, and a marginal one of still longer spines closely set. Length $3\frac{1}{2}$ mm.; width $1\frac{1}{3}$ mm.

Hab. Natal (Verulam), G. A. K. Marshall.

HISPA EXIMIA, n. sp.

Flavous, covered with a dense flavescent pubescence; antennæ moderately long and moderately slender, third joint not much longer than the fourth, but shorter than the seventh; the two basal joints are infusate; prothorax with two small, round impressions with a fuscous tinge on each side of the disk, the lateral process of five vertical spines, the hind one of which is bifid, lanuginose; elytra deeply seriato-foveate and having on each side three rows of not closely set sharp spines and a marginal one of longer and more closely set ones; the spines on the elytra are infusate to a very short distance from the base, while those on the prothorax are infusate at apex only. Length 6 mm.; width 3 mm.

Hab. Transvaal (Potchefstroom), T. Ayres.

HISPA FALLACIOSA, n. sp.

Brownish red, shining, densely pubescent; antennæ moderately long and thick, joints fifth to sixth very short, nodulose, third not much longer than the second, seventh nearly as long as the four preceding and much thicker, the four apical ones thickened and elongate; prothorax with two small, fuscous, round impressions on each side of the disk, the lateral spinous process not lanuginose or pubescent; elytra with three dorsal series of moderately long, dark spines set at some distance from one another, but of equal length, those of the marginal row a little longer than the dorsal ones and more closely set. Length $4\frac{1}{2}$ mm.; width $2\frac{1}{2}$ mm.

Hab. Mozambique (Rikatla), Rev. J. Tunod.

This species is easily recognised through the nodose shape of the intermediate antennal joints.

HISPA LANIGERA, n. sp.

Flavous, clothed with an extremely dense golden pubescence with a silky tinge hiding entirely the integuments, and looking like felt; antennæ moderately short, joints closely set, the five ultimate ones thickened; prothorax with a central longitudinal line, stalk of the lateral process thick, the spines infusate at tip; elytra punctato-striate, but with the punctures hidden by the pubescence, and having on each side three rows of short, black spines just emerging from the pubescence and set at some distance from one another; spines of the outer margin a little longer than the dorsal and more closely set. Length 4 mm.; width 2 mm.

Hab. Namaqualand (O'Kiep), L. Péringuey.

HISPA RAMULOSA, Chap.,
Ann. d. Belg., 1877, p. 53.

Hab. Cape Colony (Cape Town, Stellenbosch, Worcester, Clanwilliam).

GEN. THORACISPA, Chap.,
Lacordaire's Genera, vol. xi., p. 335.

THORACISPA DREGEL, Chap.,
Ann. d. Belg., 1877, p. 50.

Hab. Cape Colony (Cape Town). Very rare.

ANNALS
OF THE
SOUTH AFRICAN MUSEUM.
PART II.

V.—*On the Species of Opisthophthalmus in the Collection of the South African Museum, with Descriptions of some New Forms.*
—By W. F. PURCELL, Ph.D., *First Assistant.*

IN my previous paper ('Descriptions of New South African Scorpions,' p. 1 of this volume) the new species of *Opisthophthalmus*, then in the collection of the South African Museum, were described and partly figured. The treatment of the genus is brought to a conclusion in the present article, the principal object of which is to record the localities and local peculiarities of the specimens of *Opisthophthalmus* in our collection. The number of these specimens is very large, and as most of them have been captured within the last few years, I can vouch for the accuracy of the localities in nearly every case. I append descriptions of three new forms, received since the previous paper went to press; also descriptions of the adult females of *schlechteri*, Purc., and *chaperi*, Sim., and of the adult male of *latimanus*, Koch, none of which have yet been published. In conclusion, the synopsis of all the species known to me, begun in the last paper, is brought to completion.

The South African Museum collection now comprises twenty-five species of *Opisthophthalmus*, of which twenty-one are represented by the adults of both sexes, three by one sex only, and one by a young specimen. There remain, at most, three described South African species, which are not yet represented in the collection.

Sexual Characters and Age.—The determination of the sex and age (*i.e.*, whether adult or young) is of first importance in ascertain-

ing the specific name. I have already pointed out in a previous paper (p. 1 of this volume) that the sexes may be readily distinguished by the structure of the operculum, a character which holds good for even fairly young specimens and is the only perfectly reliable one.

The structure of the pectines invariably differs with the sex. In the female the scape is always free of teeth for a certain distance at the base behind, while in the male it is either toothed along the whole length of the hind margin or it is also without teeth at the base; in the latter case, however, this toothless portion always represents a smaller proportion of the whole length than in the female of the same species. The limit to the number of teeth is also always highest in the male and lowest in the female. Pectinal characters do not alter with age.

As regards other characters, the two sexes are very much alike up to the time when the last moult takes place; in the nearly full-grown males, however, some of the characteristic granulation of the adult may appear, while the hand is generally a little narrower than in the female of the corresponding stage. In these pre-adult stages the hands are often much darker in colour and more granular than in the adults in both sexes.

In the adult female the hands are wider in proportion to the length of the hand-back than is the case in the previous stage; but it must be remembered that in adult specimens from one locality this proportion may be the same as that found in nearly adult specimens from another locality (*e.g.*, in *wahlbergi*). The adult male is generally easily recognisable by the characteristic form of the hands and tail. After the last moult the hands appear narrower, flatter, and often longer and smoother than in the female, while the tail becomes much longer and nearly always stouter. Generally the first and second caudal segments together equal the carapace in length (in the female the length of carapace generally much exceeds that of the first two caudal segments). In the adult male the terga, sterna, and under side of the anterior caudal segments are often much more granular and the palps much longer than in the female or young males, while the anterior upper crest of the humerus is undeveloped in the females of some species.

Specific Characters.—As the species of this genus are both numerous and very variable, I have thought it advisable to discuss the relative value of the characters available for classification.

1. The presence of a well-developed, Y-shaped, forked groove on

the anterior part of the carapace appears to me to be an excellent specific character. In some species, however (*e.g.*, *fossor*), in which it is usually absent, the fork may sometimes appear in a partially developed form.

2. A very important specific character is the general shape of the hand in both sexes with regard to (i) the proportions of the width of the hand to the length of the hand-back, and (ii) the convexity and, to a lesser extent, the granulation of the upper surface. Although the proportions may vary in specimens from different localities (*e.g.*, (♀ *wahlbergi* and *karrooensis*), the variation appears never to be very great. The length of the movable finger, on the contrary, varies too much to be of specific value.

3. The two secondary keels on the inner part* of the upper surface of the hand are constantly present in some species, *e.g.*, *fossor*, *macer*, and constantly absent in others, *e.g.*, *chaperi*, and here form good specific characters. In others again, *e.g.*, *latimanus* (= *calvus*), these keels may be quite absent or well developed, even in one and the same specimen.

4. The finger-keel and the superior crest of the brachium is subject to variation in many species; in others, however, notably in the *capensis-granifrons* group, the condition of the finger-keel is of specific importance.

5. A strong granulation on the *mesial* part of the ventral surface of the abdominal segments is of considerable specific value. If, however, this granulation be extremely fine or weak, although constantly present in specimens from one locality, it may entirely disappear or be replaced by a striated or wrinkled surface in a series of specimens of the same species from another locality, *e.g.*, in *karrooensis*. The granulation on the *lateral* parts of the last abdominal sternite is very variable and of no specific value.

6. The presence or absence of a coarse granulation on the sides of the carapace bordering the interocular area forms, as far as my observations go, an excellent specific character. The granulation of the interocular area itself is, however, rarely of importance, being subject to great variation.

7. As regards the position of the median eyes, such great variations have been noticed in some species, *e.g.*, in *gigas* and *glabrifrons*, that I have doubts as to the value of this character.

8. With regard to the granulation of the crests of the cauda it may be stated that, if the granulation be weak, it may be expected

* The upper surface of the hand is divided by the finger-keel into an outer and an inner part.

to vary either to a strong granulation or to vanish altogether in local varieties of the same species.

9. With regard to the granulation on the other parts of the body, it may be remarked that that on the intercarinal spaces of the tail (excepting on the under side of the anterior segments), on the terga, on the legs, and on the surfaces of the humerus and brachium of the palps, is of little or no specific value. (Exception must be made, however, of the posterior surface of the brachium in some species, *e.g.*, the *capensis-granifrons* group.)

10. The extent to which the posterior edge of the scape of the pectine is toothless at the base is of specific value, as it does not seem to vary much. The number of pectinal teeth, however, can scarcely be considered of specific importance, being one of the first characters to change in local varieties.

11. The coloration is, of course, not in itself of specific importance, although differences in colour, especially of the legs, often accompany other good characters (*e.g.*, in the *fossor-chaperi* group).

12. The structure of the spiracles I found to vary so much, that I now consider them of no value, although at first I was inclined to attach some importance to them (*e.g.*, in *fuscipes*).

13. The length of the superior terminal lobe of the tarsi of the legs is not of specific importance, although often useful in conjunction with other characters. In many cases, where a large series of specimens has been examined, the lobe although normally long (or short) occasionally appears short (or long, as the case may be) in a few specimens.

14. Similarly the number of external spines on the under side and on the terminal lobe of the posterior tarsus, although often useful, is subject to variation in a small percentage of specimens in a large series.

15. I have examined a large number of specimens in order to ascertain the specific value, if any, of the so-called stridulating organ, recently described by Pocock (Nat. Sci., ix., p. 17, 1896) and composed of 1 to 6 or 7 spathulate or obovate lamellæ (modified hairs) attached to the inner surface of the basal joint of each mandible. I found this organ completely absent in all our specimens of *pallidipes*, *gigas*, *longicauda*, *schlechteri*, and *ater*, while Pocock found them absent in *wahlbergi*. In all the type-specimens of *peringueyi* and *crassimanus* the organ is also absent. In a specimen from the Cedarberg Range, however, differing in no other respect from the typical *peringueyi*, excepting slightly in colour, I found four well-

developed lamellæ on each mandible, while among the numerous specimens of *crassimanus*, which I have grouped together as *var. β*, 1-3 lamellæ are often present; so, for example, in 22 specimens from Rooibank lamellæ were present at least on one mandible in 15 and absent in 7, while in 21 specimens from Houmoed they were present in 12 and absent in 9. In *glabrifrons* the lamellæ were found in the specimens from Mashunaland, but were absent in all specimens from the Transvaal. In *granicauda* 1-2, and in *karrooensis* and *carinatus* 3-6 lamellæ were present in all the specimens in the Museum. I have also found the organ in all the remaining species of the genus with the exception of *laticauda* (which, being dry, I have not examined). As I have not, however, examined all the specimens in the collection I cannot state whether the organ is invariably present in these latter.

The fact that these lamellæ may be constantly absent from all specimens of some species from one locality and yet appear in some of the specimens of the same species from another locality tends to show that no specific value can be attached to the presence or absence of this organ. Of course there may be, and probably are, species in which the organ is constantly present and others in which it is constantly absent, and in such cases it may be of some service, *e.g.*, in a synopsis.

Habits.—Nearly all the species of this genus construct deep burrows in the earth, in which they remain during the day. These burrows are all formed after the same plan. They enter the ground generally at an incline not exceeding half a right angle, proceed for about 6-10 inches in the same plane in a straight or winding direction, and then suddenly dip down and descend, often with much winding, to nearly a foot below the surface. These burrows may always be easily recognised by their depth in conjunction with the shape of the entrance, which resembles in outline the space between the eyelids of an open human eye.

Two species, *karrooensis* and *pallidipes*, do not appear to construct deep burrows at all, but live in shallow excavations under stones. Both these scorpions are remarkable for the long and slender hands of the adult male. I do not know the habits of the allied species with similar hands, *viz.*, *peringueyi*, *gigas*, and *longicauda*.

Distribution.—The genus *Opisthophthalmus* is very characteristic of the Cape Fauna. All the species whose localities are known, with the exception of two, have been recorded from the Cape Colony, in which there appears to be scarcely a part not inhabited by some

representative of the genus. They often occur in great abundance, but generally only one species inhabits a particular locality. A few exceptions to this rule have come under my notice. For instance, at Rabiesberg, in the Langeberg Range, Worcester Division, *macer* and *chaperi* occur in equal abundance on the same spot. There are other apparent cases of several species occurring at the same locality, *e.g.*, at Ashton *chaperi* and *karrooensis* are very common, but here I found the latter confined to the stony "karroo-koppies" (hillocks) and the former to the lower-lying ground. Bushmanland, however, appears to form a notable exception to the rule, as Mr. Max Schlechter found two or more species of the genus at most of the localities he touched at in that country.

The range of some of the species is very large, *e.g.*, of *carinatus*, *glabrifrons*, and *macer*. Many, however, have a very limited range, being often confined to a few Divisions. By far the larger number inhabit the western half of Cape Colony between the south coast and the Orange River, within which region doubtless a number of forms still remain to be discovered.

A striking feature of the species of this genus is their proneness to form local races or varieties, showing peculiarities of either coloration, size, armature of the tarsi, number of pectinal teeth, length of fingers of hands, granulation of the sterna and interocular area, form of spiracles, &c. On the other hand, all specimens from one and the same locality are nearly always similar amongst themselves as regards these characters.

It may be stated as a general rule that the species in which the median groove of the carapace is forked anteriorly are characteristic of the districts bordering on or near to the west coast of the Cape Colony, *viz.*, Cape, Stellenbosch, Paarl, Malmesbury, Tulbagh (south-western part), Piquetberg, Clanwilliam, Calvinia (at least the western part), Van Rhynsdorp, and Namaqualand (exclusive of Great Bushmanland), while those species in which the groove is not forked occupy the territory lying to the east and north of the coast belt above mentioned, and extending as far west as the Divisions of Stellenbosch (southern part), Caledon, Worcester, Tulbagh (exclusive of the south-western part), Ceres, Sutherland, Fraserberg (?), Kenhardt, Great Bushmanland, and German South-West Africa. Besides *carinatus*, which occurs in Bushmanland, German South-West Africa, and Rhodesia, *pictus* is the only notable exception to the above rule, the latter being the only species with a forked groove found in the Republics or in the eastern parts of the Cape Colony. It is recorded from Port Elizabeth and the Orange Free

State, and is apparently quite separated geographically from any other species of the section. In the Cedarberg Range in Clanwilliam one species without the forked groove is found, while Little Bushmanland harbours representatives of both sections.

I shall first consider the region occupied by the species provided with a forked groove.

Starting from the south-west and proceeding northwards, we meet in succession with four closely related forms, viz., *capensis* (Cape Town and neighbourhood), var. *fuscipes* (Paarl and south-western part of Tulbagh), *leipoldti* (Clanwilliam), and *granifrons* (highlands of Van Rhynsdorp and Namaqualand). Characteristic of these four forms is the coarse granulation on the ventral surface of several posterior abdominal segments in the adult male and of the last segment in the female. This granulation is always present in the *mesial* part of the segment, even if absent from the sides. Related to *granifrons* but differing chiefly in the smoothness of the sterna (except in the case of the male of the first) are *granicauda* and *ater* from Namaqualand, *schlechteri* from Little Bushmanland, and *laticauda* from Calvinia. All these species, together with *crassimanus* and probably also *pictus*, appear to form a natural group, characterised by the median groove of the carapace forked anteriorly (except in *crassimanus*), the terminal tooth of the superior caudal crests enlarged (except in var. *fuscipes*), the fourth tarsus with few spines, there being generally none, rarely one, on the exterior part of the inferior surface, and often only *three* on the external terminal lobe, the hand in the male (except in *capensis* and *leipoldti*) generally granular above and like that of the female but narrower, the scape of the pectines in the male generally free of teeth at base behind (except in *capensis*), and the racket-shaped lamellæ on basal joint of mandibles absent or only 1-3 in number.

O. pallidipes and *peringueyi* form a small group apparently not related to the *granifrons* group and having the hand in the adult males very long, slender, and smooth above. *O. pallidipes* extends over almost the same area occupied by the *granifrons* group (from Piquetberg to Namaqualand), occurring in abundance, however, only in places where no representatives of the latter group are found. The fourth tarsus is many-spined, being always provided with 1-3 external spines below and 4 on the external terminal lobe. The terminal tooth of the superior caudal crests is enlarged, and the lamellæ on the basal mandibular joint may be present or absent.

Passing to the species in which the median groove of the carapace is not forked, we find in the first place a small group of three forms

which differ from the *pallidipes* group only in the absence of the forked groove. All are karroo-forms, and include *karrooensis* inhabiting Robertson, Prince Albert, Beaufort West, Victoria West, and probably also some of the adjoining Divisions, and two forms from Bushmanland, viz., *gigas* and *longicauda*.

O. austerus, which does not appear to be closely related to any other species, has been recorded from the eastern high-lying part of the Worcester Division, and from Sutherland.

A large group of mostly dark-coloured species, characterised by the superior caudal crests not ending in an enlarged tooth, occupy the southern and eastern part of Cape Colony, Natal, the Republics, and Rhodesia. This group runs into two series connected by *O. macer*, viz., (a) forms with the sides of the carapace coarsely granular: * *chaperi* (Langeberg Range in Robertson and Worcester Divisions), *fossor* (western part of Worcester Division and greater part of Tulbagh Division), and *pattisoni* (Cedarbergen in Clanwilliam Division); (b) forms with the sides of the carapace finely granular: † *macer* extending along the South-West Coast from False Bay to Zululand and northwards as far as Ceres, *latimanus* from Albany Division, *pugnax* from Transvaal (also Natal and eastern part of Cape Colony, teste Pocock), *glabrifrons* from north-east of Cape Colony, Transvaal, and Rhodesia. This group, although as large as the *granifrons* group, is much more homogeneous. The fourth tarsus has 4 spines on the external lobe and 1-3 (rarely none) external spines on the under side as well. The pectines are rectangular at the base behind in the male. The last segment of the abdominal sterna is often smooth in the middle and granular laterally.

O. crassimanus from Bushmanland is evidently closely related to *granifrons*, with which I have grouped it above in spite of the absence of a forked median groove.

O. wahlbergi from Bushmanland and German South-West Africa and *O. flavescens* from the latter territory are, as regards their affinities, apparently isolated forms.

I wish here to express my obligations to Dr. J. W. B. Gunning, Director of the Staats Museum at Pretoria, for having placed the valuable collection of Transvaal scorpions of his Museum at my disposal for examination. This collection proved of great service in the elucidation of certain points in connection with *O. pugnax* and *O. glabrifrons*.

* Including also *O. intermedius*, Kraep. (locality unknown).

† Including also *O. breviceps*, Poc. (locality unknown).

OPISTHOPHTHALMUS WAHLBERGI (Thor.).

Micæphonus wahlbergi, Thorell, Ann. Mag. N. H. (4) xvii., p. 13, 1876; Atti. Soc. ital., xix., p. 148, 1877, ♀.

Opisthophthalmus wahlbergi, Kraepelin, Revis. d. Skorp., ii., p. 83, in Jahrb. Hamb. Wiss. Anst., xi., 1, 1894.

Area of Distribution.—German South-West Africa (part ?) and north-western corner of Cape Colony (Little and Great Bushmanland).

The Museum possesses a very large number of specimens, recently collected by Mr. Max Schlechter in Bushmanland, in the Divisions of Namaqualand and Kenhardt. These belong to two races, readily distinguishable by the coloration of the cauda but not presenting, as far as I can detect, any structural differences.

A. *Yellow-stinged Race*.—Fourth caudal segment black, lighter above, the fifth segment black, except at the posterior end, which is pale yellow like the vesicle; mandibles and fingers not darkened; breadth of hand equalling or only slightly exceeding (by not more than $\frac{1}{2}$ mm.) the length of hand-back in adult ♀, but less than the length of hand-back in young females; No. of pectinal teeth in ♀ 16–22, in ♂ 23–29. Inhabits a narrow strip of country in Little Bushmanland, lying immediately south of the Orange River between Hunitsamas and Naroep.

(a) 57 ♀ (30 adult) and 29 ♂ (6 adult)* from the neighbourhood of Naroep: No. of pectinal teeth in ♀ 17–22, in ♂ 24–29; length of carapace in ad. ♀ $11\frac{3}{4}$ –15 mm., in ad. ♂ 12– $12\frac{3}{4}$ mm.

(b) 15 ♀ (9 ad.) and 8 ♂ (2 ad.) from Hunitsamas, seven miles south of Ramond's Drift on the Orange River: No. of pect. teeth in ♀ 16–21, in ♂ 23–28; length of carapace in ad. ♀ $11\frac{1}{2}$ – $13\frac{1}{2}$ mm., in ad. ♂ $11\frac{1}{4}$ – $12\frac{3}{4}$ mm.

Mr. Schlechter also found this variety at—

(c) Zandhoogte between Hunitsamas and Naroep, Little Bushmanland.

(d) Vuurdood, near Ramond's Drift, Namaqualand Division.

B. *Black-stinged Race*.—Vesicle, whole of fifth caudal segment, the greater part of the fourth, and a few patches at the posterior end of the third segment below, blackened; fingers of the mandibles

* These figures throughout this paper represent the number of specimens which I have individually examined with regard to the pectinal teeth, length of carapace, armature of tarsi, &c. The figures given for the pectinal teeth, therefore, represent the actual limits, between which their number varies in a given set of specimens. Similarly the figures given for the lengths of the carapace represent the least and greatest length in each set.

black, those of the palps reddish brown; breadth of hand varying according to the locality, being either as in Race A, or else considerably exceeding the length of hand-back (by $1-1\frac{1}{2}$ mm.) in ad. ♀, but equal to, or less than, this length in the younger females; No. of pect. teeth in ♀ 16-20, in ♂ 23-30. This form appears to extend throughout the whole length of Little and Great Bushmanland but excepting at Naroep, where both races meet, it does not appear to encroach upon the territory occupied by the Yellow-stinged Race.

Localities in the Namaqualand Division:—

(a) 13 ♀ (7 ad.) and 6 juv. ♂ from Grasmond (on the road from Steinkopf to Henkries): No. of pect. teeth in ♀ 16-20, in ♂ 23-26; length of carapace in ad. ♀ $11\frac{1}{2}-13\frac{1}{4}$ mm.

(b) Jackalswater (half-way between Steinkopf and Henkries).

(c) 24 ♀ (17 ad.) and 19 ♂ (5 ad.) from Henkries in Little Bushmanland: No. of pect. teeth in ♀ 17-20, in ♂ 23-28; length of carapace in ad. ♀ $10\frac{2}{3}-13$ mm., in ad. ♂ $11-12\frac{1}{2}$ mm.

(d) 21 ♀ (13 ad.) and 12 juv. ♂ collected between Henkries and Wolftoon in Little Bushmanland: No. of pect. teeth in ♀ 17-20, in ♂ 25-30; length of carapace in ad. ♀ $10\frac{2}{3}-13$ mm.

(e) 28 ♀ (18 ad.) and 16 juv. ♂ from Sabies, in Bushmanland: No. of pect. teeth in ♀ 16-20, in ♂ 24-29; length of carapace in ad. ♀ 11-13 mm.

(f) 33 ad. ♀ and 15 ♂ (3 ad.) from Naroep, Great Bushmanland: No. of pect. teeth in ♀ 15-20, in ♂ 23-29; length of carapace in ad. ♀ 11-13 mm., in ad. ♂ $12\frac{2}{3}-13\frac{1}{4}$ mm.

(g) 12 ad. ♀ and 11 ♂ (2 ad.) from Naramoep, Great Bushmanland: No. of pect. teeth in ♀ 16-19, in ♂ 22-26; length of carapace in ad. ♀ $12\frac{1}{3}-15\frac{1}{4}$ mm., in ad. ♂ $13-14\frac{3}{4}$ mm.

(h-j) Aggenys, Gams, and Kykgat, all in Great Bushmanland.

Localities in the Kenhardt Division:—

(k-o) Namies, Pofadder, Rooibank, De Neus, and Houmoed, all in Great Bushmanland, in the western part of Kenhardt Division.

Besides the above specimens the Museum also possesses an ad. ♀ and a young ♂ from German South-West Africa (*Dr. Marloth*), in which none of the caudal segments nor the mandibles are blackened: No. of pect. teeth in ♀ 18-19, in ♂ 25; length of carapace in ♀ $14\frac{2}{3}$ mm.; breadth of hand much exceeds the length of the hand-back (by $1\frac{3}{4}$ mm.).

In *O. wahlbergi* the interocular area in the female is either smooth or provided with a few scattered granules anteriorly, and in front of the median eye-tubercle, while in the adult male it is granular (rarely almost smooth) anteriorly, and in front of the eye-tubercle,

and smooth only on the convexities. The length of the carapace is equal to that of the first two caudal segments taken together in the adult male, and to these two segments together with $\frac{1}{3}$ of the third in the females and nearly adult males. The scape of the pectines is free of teeth at the base for about $\frac{1}{3}-\frac{2}{3}$ of its length in the female, and for $\frac{1}{3}-\frac{1}{4}$ of its length in the male (and not rectangular at the base). The humerus and brachium of the adult male are longer than in the female, but the hand is of about the same length, although much narrower; the upper side of the hand is nearly flat in the adult male, and the finger-keel is very much more strongly developed than in the female. The hand of the nearly adult male resembles that of the female.

OPISTHOPHTHALMUS CARINATUS (Pet.).

1861. *Heterometrus carinatus*, Peters, Sitz. Ber. Berl. Akad., 1861, p. 505 (I have not seen this work).

1877. *Opisthophthalmus anderssoni*, Thorell, Atti. Soc. ital., xix., p. 239, ♀ (teste Kraepelin).

1877. *Opisthophthalmus histrio*, Thorell, *ibid.*, p. 242, ♂ juv.

1879. *Petrooicus carinatus*, Karsch, Munch. Entom. Mitt., 1879, p. 109 (quoted from Kraepelin).

1887. *Petrooicus furcatus*, Simon, Ann. Soc. Ent. France (6) vii., p. 380.

1893. *Elcopetrus carinatus*, Pocock, Ann. Mag. Nat. Hist. (6) xi., p. 307.

1894. *Opisthophthalmus carinatus*, Kraepelin, Revis. d. Skorp., ii., p. 85.

(a) 1 young and 2 ad. ♀ from Houmoed (Kenhardt Division) and Naroep (Namaqualand Division), both in Great Bushmanland (*Max Schlechter*): No. of pect. teeth 19-20; length of carapace in ad. ♀ $17\frac{1}{3}$ -19 mm.; interocular area fusco-olivaceous like the rest of the carapace; * legs pale ochraceous.

(b) 1 juv. ♀ from Jackalswater, half-way between Steinkopf and Ramond's Drift, Namaqualand Division) (*Max Schlechter*). This specimen, which is the smallest we possess, is 35 mm. long, and agrees closely with *O. histrio*, Thor., having the hands, the upper edges of the fifth caudal segment, and the carapace smooth, and the anterior margin of carapace not crenulated. The anterior fork

* A type of coloration, as Pocock remarks, rare in this genus, and found by him also in specimens of *carinatus* from Mashunaland.

of the median groove of the carapace is not developed. The absence of an anterior upper crest of granules from the humerus in *histris* is doubtless due to its being much younger, as it measured only 26 mm. in length. I have no doubt as to the correctness of Kraepelin's view that *histris* is merely a very young male of *anderssoni*, Thor.

(c) 4 ♀ (2 ad.) and 1 ad. ♂ from German South-West Africa (*Dr. Marloth*): No. of pect. teeth in ♀ 17–20, in ♂ 24. The adult male differs from the females in having a longer and stouter tail, the posterior basal angle of the pectinal scape nearly rectangular, and therefore toothed along nearly its whole length (in the ♀ free of teeth at base behind for about $\frac{2}{3}$ of its length), and the hands slightly narrower, flatter above, with longer fingers. Width of hand in ♀ $13\frac{1}{2}$ mm., in ♂ $12\frac{1}{3}$ mm.; length of hand-back in ♀ 10 mm., in ♂ $10\frac{1}{2}$ mm.; length of movable finger in ♀ $13\frac{1}{2}$ mm., in ♂ $18\frac{1}{4}$ mm. Further, the under surface of the abdominal and anterior caudal segments are strongly corrugated in the male but smooth in the female.

The area of distribution of this species is of very great extent, it having been also recorded from various parts of South-East Africa. It has not been found south of Bushmanland in the Cape Colony, nor in the Republics or Natal.

OPISTHOPHTHALMUS SCHLECHTERI, Purc.,

Ann. S. Afr. Mus. i., p. 12 (juv. ♂), 1898.

Area of Distribution.—Mr. Max Schlechter found this species in that part of Little Bushmanland which lies between Henkries, Naroep, and Sabies, this being nearly the same area occupied by the yellow-stinged race of *O. wahlbergi*.

(a) 5 ♀ (4 ad.) and 2 ad. ♂ from Henkries, Little Bushmanland (*Max Schlechter*): No. of pect. teeth in ♀ 13–17, in ♂ 18–22; length of carapace in ad. ♀ $13\frac{2}{3}$ – $14\frac{2}{3}$ mm., in ad. ♂ $13\frac{3}{4}$ –14 mm.

(b) 6 ♀ (4 ad.) and 8 ♂ (3 ad.) collected between Henkries and Wolftoon in Little Bushmanland (*Max Schlechter*): No. of pect. teeth in ♀ 13–16, in ♂ 19–22; length of carapace in ad. ♀ $13\frac{1}{4}$ – $14\frac{3}{4}$ mm., in ad. ♂ $13\frac{3}{4}$ –14 mm.

(c) 1 ad. ♀ and 1 ad. ♂ from Wolftoon, Bushmanland (*Max Schlechter*): No. of pect. teeth in ♀ 15–16, in ♂ 20–21; length of carapace in ♀ $13\frac{1}{2}$ mm., in ♂ $13\frac{2}{3}$ mm.

(d–g) Specimens from Vuurdoord (near Ramond's Drift on the Orange River), Hunitsamas (near Vuurdoord), Sabies, and Naroep (*Max Schlechter*).

The type-specimen of this species has since proved to be a young

male. It differs, however, so little from the adult that I need make only a few corrections and additions to the original description.

Adult Male (recently killed, in spirits).

Colour.—The narrow black stripe on each side of the interocular area of the carapace is very often absent.

Carapace as long as the first two caudal segments taken together ; its anterior edge generally slightly emarginate in the middle ; sides of the carapace granular, coarsely so along the lateral borders of the interocular area.*

Terga very finely roughened anteriorly, finely granular posteriorly and at the sides.

Palps.—Under surface of humerus more or less granular ; hands with the inner part of upper surface weakly convex, nearly smooth or weakly granular, the secondary keels practically obsolete, the two black lines representing these keels sometimes absent ; finger-keel moderate, granular, or nearly smooth, especially in the distal part.

Pectines with 18–22 teeth.

Measurements in Millimetres.—Total length 96 ; length of carapace 14 ; width of carapace 12 ; distance of eyes from anterior edge 9 ; width of hand $8\frac{1}{2}$; length of hand-back $9\frac{1}{2}$, of movable finger $12\frac{1}{4}$, of tail 55 ; width of first caudal segment $5\frac{3}{4}$, of fifth caudal segment $3\frac{1}{2}$.

Six adult specimens from Bushmanland. The humerus and brachium are somewhat longer, while the hand is much narrower than in the female.

Adult female (recently killed, in spirits).

The adult female closely resembles the adult male, but differs from it in the following characters :—

Carapace as long as the first and second caudal segment and one-half of the third.

Terga.—Segments 1–6 smooth and shiny, granular only at the sides ; seventh segment smooth anteriorly.

Palps.—The crests of the humerus and brachium and often also

* In the synoptic table in my previous paper (p. 30 of this journal) this granulation is represented as being finer than that of *granicauda* and *ater*. In the adults of *schlechteri* and *granicauda*, however, the granulation is equally coarse, although finer than in *ater*.

the granules on the upper surface of hands darkened; hand more convex above and broader, its breadth generally slightly exceeding the length of hand-back in the adult, but less than this length in the young female.

Pectines with 13–17 teeth.

Measurements in Millimetres.—Total length 90; length of carapace 14; width of carapace $12\frac{1}{3}$; distance of eyes from anterior edge $9\frac{1}{4}$; width of hand $9\frac{1}{3}$; length of hand-back 9, of movable finger $10\frac{1}{2}$, of tail 47; width of first caudal segment $5\frac{1}{4}$, of fifth caudal segment 3.

Nine adult specimens from Bushmanland.

OPISTHOPHTHALMUS GRANIFRONS, Pocock,

Ann. Mag. N. H. (6) xvii., p. 240, pl. x., fig. 1–1b, 1896.

Headquarters.—High-lying parts of the Division of Namaqualand, C. Col. (with winter rains), where it is extremely abundant. According to Mr. Max Schlechter this scorpion lives in deep burrows of about $1\frac{1}{2}$ –2 feet in length.

The following is a list of the specimens in the Museum, the localities of which are accurately known:—

A. *Principal Form.*—In the last segment of the abdominal sterna in the ♂ about 15 irregular transverse rows of granules may be roughly counted between the front and hind margins. Terminal tarsus of third leg generally with one (very rarely two) external spines below in addition to the four spines on the external terminal lobe.

(a) 28 ad. ♀ and 21 ad. ♂ from Steinkopf (2,700 ft., *W. H. Turle, M. Schlechter*): No. of pect. teeth in ♀ 10–15, in ♂ 14–18; length of carapace in ♀ $13\frac{1}{3}$ –16 mm., in ♂ $12\frac{3}{4}$ – $14\frac{3}{4}$ mm.; external inferior spine of tarsus of third leg present in 88 per cent. of cases; the larger transverse granules of the last abdominal sternite in the ♂ oval to linear; the granulation of the anterior half of the interocular area rather weak, and only a few of the granules bordering the sides of this area are large and coarse.

(b) 8 ♀ (ad. and juv.) and 4 juv. ♂ from Annenous (1,775 ft., *W. H. Turle*): No. of pect. teeth in ♀ 12–15, in ♂ 16–18; length of carapace in ad. ♀ 13–15 mm.; external tarsal spine of third leg present in 90 per cent. of cases; granulation and carapace as in the specimens from Steinkopf. (Placed provisionally in this group).

The Museum also possesses a few specimens from—

(c) Jackalswater (half-way between Steinkopf and Henkries, Namaqualand Division, *Max Schlechter*);

(d) Grasmond (half-way between Steinkopf and Jackalswater);

(e) Sabies, Bushmanland (*M. Schlechter*).

The specimens from these three localities are of interest as they occur in the territory belonging to *crassimanus* and *wahlbergi*, and appear here very much rarer than the two latter. There are no adult males amongst them, but they agree in other respects with the principal form with which I provisionally place them. Tarsus of third leg always with one external spine below.

B. Var. β (*Southern Race*).—Last segment of the sterna in the σ with about 20 or more irregular transverse rows of granules, the granules on this segment being much more numerous and closer together. Tarsus of third leg generally with no external spine below. Inhabits more southern territory.

(f) 9 ad. φ and 5 ad. σ , collected between Steinkopf and Springbok (*Max Schlechter*): No. of pect. teeth in φ 13–17, in σ 17–20; length of carapace in φ $15\frac{1}{3}$ – $18\frac{1}{2}$ mm., in σ $16\frac{1}{4}$ –17 mm.; external tarsal spine of third leg present in only 11 per cent. of cases; the mesial sternal granules in the σ mostly strongly linear; the granulation on the anterior half of the interocular area and on the sides of the carapace very coarse and strong.

(g) 10 ad. φ and 8 ad. σ from the Kamiesberg (*Max Schlechter*): No. of pect. teeth in φ 13–18, in σ 18 (rarely 16)–22; length of carapace in φ $14\frac{1}{2}$ –17 mm., in σ $15\frac{1}{3}$ – $17\frac{1}{3}$ mm.; external tarsal spine of third leg present in 31 per cent. of cases; mesial sternal granules in the σ mostly linear; granulation of the carapace generally moderately strong.

(h) 2 ad. φ and 1 ad. σ from Garies (alt. 830 ft., *Max Schlechter*): No. of pect. teeth in φ 13–17, in σ 19–21; length of carapace in φ $17\frac{1}{2}$ mm., in σ $15\frac{1}{2}$ mm.; no external spine below on tarsus of third leg; mesial sternal granules in σ linear-oval, finer than in the previous specimens, the granulation thus approaching that of *O. leipoldti*; granulation of carapace moderately strong.

From the above it appears that *O. granifrons* is made up of two races, distinguishable chiefly by the granulation of the last segment of the abdominal sterna in the male, but also, although with much less certainty, by the limits within which the length of the carapace and the number of the pectinal teeth vary, and by the presence or absence of the external inferior spine on the tarsi of the third pair of legs. These differences alone are, however, not of specific importance. Pocock's typical female, as well as his male specimen, evidently both belong to the northern or principal form, his young specimen, however, to the southern race. As the pectines were

absent from the specimen correctly described by Pocock as the male of *granifrons*, I may here mention that the scape of the pectines is rounded at the base and free of teeth in the male for about $\frac{1}{4}$, in the ♀ for about $\frac{2}{3}$ of its length.

The following remarks are based on a careful examination of considerably over a hundred adult specimens from various localities.

The finger-keel is composed of coarse granules, by which this species is generally readily distinguishable from its allies *O. leipoldti*, *fuscipes*, and *capensis*. Occasionally, although rarely, the granules in the distal part fuse to a short smooth ridge, which, however, never occupies more than $\frac{1}{4}$ of the length of the keel. The granulation on the last abdominal sternite of the ♀ is weak, but never quite absent, and may extend over nearly the whole segment or be reduced to a few mesial granules. The superior process of the tarsi is very rarely almost as long as the lateral lobes, being generally much shorter than these. The number of the spines on the external lobe of the posterior tarsi is remarkably constant. I found four such spines on one of the legs in a single specimen; in every other case there were only three. The posterior half of the interocular area of the carapace is generally nearly smooth, but in a few specimens (of unknown locality) with very strong granulation the whole of this area was coarsely granular. The maxillary processes are often entirely infuscated.

OPISTHOPHTHALMUS LEIPOLDTI, Purc.,

Ann. S. Afr. Mus., i., p. 18, pl. iii., fig. 5, ♂ and ♀, 1898.

The Museum has recently received an additional number of well-preserved specimens (in formaline) kindly collected by Mr. R. Pattison at Clanwilliam (alt. 245 ft.). The species lives in burrows alongside of the main street of the village. The total number of adult specimens, which I have been able to carefully examine, now amounts to 22 ♀ and 15 ♂. The external lobe of the tarsus of fourth leg is almost invariably provided with three spines, a single specimen with four such spines being the only exception I came across. In no case is the superior process of the tarsi shorter than the lateral lobes. The pectinal teeth vary as already recorded. The finger-keel is not rarely broken up into granules in its proximal part, so much so, sometimes, that the smooth distal portion only occupies $\frac{1}{3}$ of the length of the keel. The posterior side of the brachium is always furnished along the middle, especially in the distal half, with some coarse isolated granules, in addition to the semicircular ridges

encircling the hair-pits. The presence of these granules and of those on the upper crest of the brachium constitute the principal characters by which this species can be distinguished from the closely allied *O. capensis*. Length of the carapace in adult ♀ $12\frac{3}{4}$ –15 mm.; in adult ♂ 13 – $14\frac{1}{2}$ mm.

OPISTHOPHTHALMUS CAPENSIS (Herbst).

In his 'Revision der Skorpione' (p. 100) Kraepelin appears to have confused two different species under the name of *O. pilosus*. The male is, of course, that of *capensis*, and it seems to me very probable that the female of his *pilosus* is the male of *O. granifrons*, Pocock. I have not seen *O. latro*, Thor., but it is evidently only a male specimen of *capensis*, which is larger and darker than usual. In Thorell's elaborate description I cannot discover a single structural difference, and Thorell himself relied only upon the larger size and dark coloration to distinguish his species from *capensis*. A very large male of the latter in our collection measures 83 mm. in length, while Thorell's *latro* is 89 mm. long. In the structure of the finger-keel and of the superior crest and posterior surface of the brachium, in which *capensis* differs from its nearest allies, *leipoldti* and *granifrons*, *latro* resembles *capensis*. Further, *latro*, Thor., and *pilosus*, C. L. Koch, are stated to be identical by Kraepelin, who was able to examine and compare the type-specimens of both.

In a previous paper (p. 20 of this journal) I described a scorpion from the Tulbagh Division, under the name of *O. fuscipes*. At that time I was acquainted only with the form of *O. capensis* which occurs in the Cape Peninsula, and was able to sharply separate it from *O. fuscipes*, relying principally on the shape of the spiracles, the number of spines on the external lobe of the posterior tarsus, and the coloration. An examination of a number of additional specimens of both forms, especially those taken at new localities, has convinced me of the trifling specific value of these characters in the present case. Thus the external lobe of the fourth tarsus is always provided with 3 spines in specimens of either form taken outside of the Cape Peninsula; in specimens of *capensis* from Stellenbosch and Malmesbury the spiracles are often (and in the specimens from the Peninsula occasionally) wider in the middle than at the ends, thus approaching the condition which obtains in *fuscipes*. Moreover, in specimens from the Paarl, which otherwise closely agree with *fuscipes*, the spiracles although wider in the middle are generally narrower than in the typical *fuscipes*, the narrowest spiracles of these specimens exactly resembling the widest spiracles of the Stellenbosch

and Malmesbury specimens of *capensis*. I therefore prefer now to reduce *fuscipes* to the rank of a sub-species or local race of *O. capensis*.

The specimens in the South African Museum may then be grouped as follows :—

A. *Principal Form*: *O. capensis* (Herbst).

Scorpio capensis, Herbst., Naturg. d. Ungefl. Ins., iv., p. 62, pl. v., fig. 2, 1800. I have not seen this work.

Opisthophthalmus pilosus, C. L. Koch, Die Arach., iv., p. 91, fig. 309, 1838, adult ♂; Kraepelin ad partem, Revis. d. Skorp., ii., p. 100, 1894, ad. ♂, non ♀.

O. maxillosus, C. L. Koch, ibid., p. 93, fig. 310, young.

O. latro, Thorell, Atti. Soc. ital., xix., p. 225, 1877, ♂.

O. capensis, Thor., ibid., p. 227, ♂ and ♀; Kraepelin, *loc. cit.*, p. 97, ♀ and juv. ♂; Pocock, Ann. Mag. N. H. (6) xvii., p. 234; non C. L. Koch, *loc. cit.*, p. 89, fig. 308.

Characters.—Legs unicoloured, ochraceous (becoming reddish yellow in old spirit specimens). Terminal tooth of superior caudal crests enlarged and often spiniform in segments 2–4; spiracles with parallel edges, or somewhat wider in the middle than at the ends; number of pectinal teeth 10–13 in the ♀, 12–15 in the ♂; outer lobe of tarsus of fourth leg with 3–4 spines.

Distribution.—South-Western corner of Cape Colony (Cape, Stellenbosch and Malmesbury Divisions).

(a) 10 ad. ♀ and 12 ad. ♂ from round about Cape Town. They live in deep burrows, and under stones, and are often extremely common on the hillsides (Signal Hill, Table Mountain, Camps Bay, Wynberg Hill); also in level sandy plains (Constantia area). No. of pect. teeth in ♀ 10–13, in ♂ 12–15; length of carapace in ♀ $10\frac{1}{2}$ – $13\frac{2}{3}$ mm., in ♂ $9\frac{1}{2}$ – $12\frac{3}{4}$ mm.; external lobe of tarsus of fourth leg with 4 spines, rarely with only 3 (in 9 per cent. of cases); this tarsus occasionally (in 7 per cent. of cases) provided with an external inferior spine in addition to the 4 on the terminal lobe; penultimate segment of the abdominal sterna, with a few weak mesial granules in the ♀, but coarsely granular in the adult ♂. Ground-colour of palps and carapace ochraceous, the cauda ochraceous in the ♂, darker in the ♀. Spiracles very narrow with parallel edges, rarely somewhat wider in the middle than at the ends.

(b) 2 ad. ♀ from Simonstown, Cape Peninsula (*F. Purcell*): No. of pect. teeth 10–11; length of carapace $11\frac{3}{4}$ mm.; external lobe of fourth tarsus with 3–4 spines; spiracles narrow with parallel edges; coloration and sterna as in the Cape Town specimens.

(c) 1 ad. ♂ from the Mamre Mission Station, Malmesbury Division: No. of pect. teeth 12; length of carapace 10 mm.; external lobe of fourth tarsus with 3 spines; spiracles narrow with parallel edges; coloration and sterna as in the Cape Town specimens.

(d) 5 ♀ (2 ad.) from the village of Malmesbury (*F. Purcell*). No. of pect. teeth 10–13; length of carapace in ad. ♀ $12\frac{1}{2}$ – $12\frac{3}{4}$ mm.; external lobe of fourth tarsus with 3 spines; penultimate segment of the sterna quite smooth; coloration as in the Cape Town specimens; spiracles narrow with parallel edges or wider in the middle than at the ends.

(e) 1 ad. ♀ from the Papagaai Berg at the town of Stellenbosch (*F. Purcell*): No. of pect. teeth 11–12; length of carapace $10\frac{3}{4}$ mm.; external lobe of fourth tarsus with 3–4 spines; sterna and coloration as in the specimens from Cape Town; spiracles somewhat wider in the middle than at the ends.

B. *Sub-specific Form*: *O. capensis fuscipes*, *Purc.*

Scorpio afer, Wulfen non Linn., in: Xav. Wulfen, *Descriptiones Quorundam Capensium Insectorum*. Erlangæ; p. 39, fig. 21, 1786; adult ♂.

Opisthophthalmus fuscipes, Purcell, *Ann. South African Museum*, vol. i., p. 20, 1898, ♂ and ♀.

Characters.—Legs dark reddish brown on anterior (outer) surface, ochraceous on inner surface. Terminal tooth of superior caudal crests generally not at all enlarged, sometimes enlarged but rarely spiniform; spiracles always wider, generally very much wider in the middle than at the ends; No. of pect. teeth 9–10 (rarely 7–12) in the ♀, 9–13 in the ♂; external lobe of fourth tarsus always 3-spined; whole posterior surface of brachium very uneven.

Distribution.—Paarl and south-western part of Tulbagh Division.

The existence of an old description of a Cape *Opisthophthalmus* by Wulfen was recently pointed out to me by Mr. R. M. Lightfoot. This appears to be the first description of a species of the genus, although the author wrongly identified his specimen with *Scorpio afer* of Linnæus. Wulfen's description may be summarised as follows: Body rufo-piceus, the carapace blackened, with piceo-rufus interocular area, the legs and cauda piceo-rufus, the mandibles rufo-piceus. Hands convex above, with 5 elevated, darker, tubercular crests and pilose at the margins. Cauda with 8 granular crests. The under surface of cauda and of last abdominal segment and the hands tuberculate. Pectines with 12 teeth. From this description and the figure Wulfen's scorpion may be identified without difficulty as the adult male of *fuscipes*.

The specimens in the Museum include :—

(a) Types : 8 ad. ♀ and 6 ♂ (3 ad.) from the Tulbagh Road Railway Station at the foot of the Waterfall Mts., Tulbagh Div. (*F. Purcell*) : No. of pect. teeth in ♀ 9–10 (rarely 11–12), in ♂ 11–12 (rarely 9) ; length of carapace in ad. ♀ 11–12 $\frac{3}{4}$ mm., in ad. ♂ 9 $\frac{1}{4}$ –10 $\frac{1}{2}$ mm. ; terminal spine of superior caudal crests sometimes enlarged, rarely spiniform. Colour a rich, deep reddish brown (including the outer surface of legs, the cauda, the interocular area and sides of carapace, and the palps), the inner basal part of hands above, and sometimes also the interocular area, somewhat yellowish. Spiracles much wider in the middle than at the ends, the posterior edge being much more arched than the anterior edge. Penultimate sternal segment quite smooth (rarely with traces of weak granulation in the middle) in the ♀, finely granular in the adult ♂.

(b) 9 ♀ (4 ad.) and 8 ♂ (1 ad.) from the Paarl (*R. M. Lightfoot*) : No. of pect. teeth in ♀ 9–10 (rarely 7 or 8), in ♂ 10–13 ; length of carapace in ad. ♀ 10–10 $\frac{3}{4}$ mm., in ad. ♂ 9 $\frac{3}{4}$ mm. Coloration as in the typical *fuscipes*, the interocular area and the hands, however, more ochraceous. Spiracles wider in the middle than at the ends, although not so wide as in the specimens from the Waterfall Mts. Terminal tooth of superior caudal crests not at all or scarcely enlarged, not spiniform. Penultimate segment of sterna as in typical *fuscipes* in both sexes.

The posterior surface of the brachium in *capensis* is never coarsely granular along the middle as in *leipoldti* and *granifrons*, but is provided instead with several rows of circular or semicircular ridges, representing the elevated edges of the little depressions in which the hair-pits lie. In var. *fuscipes* the posterior surface is altogether rougher, the ridges along the middle often fuse to irregular, somewhat crenulated crests, between which a granule or two occasionally appears. The superior crest of the brachium is usually smooth, or nearly so (crenulated in *fuscipes*), but sometimes it is furnished a little proximal to the middle of the segment with a row of granules which, however, are generally situated on the anterior side of the crest, just under its upper edge, causing the latter to still appear nearly smooth when viewed from behind. The superior lobe of the tarsus of fourth leg is never shorter than the lateral lobes. The scape of the pectines is rounded at the base and free of teeth for about $\frac{2}{3}$ of its length in the ♀ ; in the ♂ the scape is straight at the base, though not quite rectangular to its axis, being free of teeth for about $\frac{1}{4}$ to $\frac{1}{2}$ of its length.

OPISTHOPHTHALMUS PICTUS, Kraepelin,

Revis. d. Skorp., ii., p. 102, 1894.

1 ad. ♀ from Port Elizabeth (*J. P. Cregoe*).

The types were recorded from the Orange Free State.

OPISTHOPHTHALMUS PALLIDIPES, C. L. Koch.

O. pallipes, C. L. Koch, Die Arachniden, x., p. 3, fig. 757, 1843, ad. ♂.*O. pallidipes*, Thorell, Atti. Soc. ital., xix., p. 227, 1877, ad. ♀ ; Kraepelin, Revis. d. Skorp., Jahr. Hamb. Wiss. Anstalten, xi., i., p. 87, 1894 ; Pocock, Ann. Mag. N. H. (6) xvii., fig. of ad. ♀ on p. 236, 1896.*Area of Distribution*.—A strip of country (with winter rains) along the west coast of Cape Colony, extending less than 100 miles inland. Headquarters : Bokkeveld Mts. (Calvinia and Van Rhynsdorp Div.), Cedarbergen (Clanwilliam Div.), Piquetberg Range (Piquetberg Div.) ; besides stragglers are found in the whole territory occupied by *O. granifrons* in the Div. of Namaqualand.(a) 1 ad. ♀ and 1 juv. ♂ from Steinkopf in Namaqualand, alt. 2,700 ft. (*Max Schlechter*) : No. of pect. teeth in ♀ 20–21, in ♂ 26–27 ; length of carapace in ♀ $16\frac{1}{2}$ mm. ; abdominal sterna and interocular area of ♀ smooth ; colour of ♀ black, excepting the legs, vesicle, interocular area and the hands. This is the most northern locality recorded.(b) 1 ♂ juv., from the village of Van Rhynsdorp, alt. 400 ft. (*Max Schlechter*) : No. of pect. teeth 25–26.(c) 20 ♀ (4 ad.) and 14 ♂ (2 ad.) collected on the high-lying country known as the Onder Bokkeveld on the Bokkeveld Mts. (near Nieuwoudtville), Calvinia Div. (*Max Schlechter*) : No. of pect. teeth in ♀ 16–21, in ♂ 24–29 ; length of carapace in ad. ♀ $15\frac{3}{4}$ –17 mm., in ad. ♂ $16\frac{1}{2}$ mm. ; interocular area smooth in the adult ; segments 1–4 of the abdominal sterna finely granular at the lateral edges in the adult ♂, smooth in the ♀ ; segment 5 smooth, generally with distinct traces of lateral keels ; colour of humerus, brachium, cauda and of hind-border of the tergal segments lighter (especially in the male), ochraceous brown.(d) 8 ♀ (1 ad.) and 7 juv. ♂ from the Pakhuisberg, Clanwilliam Div. (*Max Schlechter*) : No. of pect. teeth in the ♀ 16–22, in the ♂ 25–31 ; length of carapace in ad. ♀ 16 mm. ; interocular area nearly smooth, very weakly granular in the anterior half ; sterna as above.

These specimens show the lighter coloration of those from the Bokkeveld Mts., but possess a larger number of pectinal teeth.

(e) 3 ♀ (1 ad.) from Wupperthal, Clanwilliam Div. (*Rev. Schmolke*): No. of pect. teeth in ♀ 18–21; length of carapace in ad. ♀ $16\frac{1}{2}$ mm. These specimens show the lighter coloration of the tail and palps.

(f) 1 juv. ♂ from the Kaakadouw Pass, alt. 1,000–3,000 ft., in the Cedarbergen, Clanwilliam Div. (*R. Pattison* and *C. L. Leipoldt*): No. of pect. teeth 26–28.

(g) 2 juv. ♀ and 2 ad. ♂ from the Mission Station at Goede Verwachting (Gutwerwacht) in the Piquetberg Range, Piquetberg Div. (*Rev. Marks*): No. of pect. teeth in ♀ 17–19, in ♂ 25–28; length of carapace in ♂ $15\frac{3}{4}$ mm.; interocular area of adult smooth, except quite anteriorly, where there are a few weak granules; sterna as in the specimens from the Bokkeveld Mts.; colour of humerus, brachium, cauda and hind-border of tergal segments very dark, nearly black, in the ad. ♂.

(h) 1 ad. ♂ (dry) labelled “Touws River,” Worcester Div. This is an old specimen, and I am not quite certain of the locality. It differs remarkably from the specimens we possess from the more western parts of the Colony. The upper crest of the brachium is coarsely crenulated, in the proximal part even granular; the ventral surface of the abdomen and of the first two caudal segments, though apparently smooth to the naked eye, is provided with exceedingly minute granules, evenly scattered over the surface at distances of about $\frac{1}{4}$ mm. apart; the anterior fourth of the interocular area is coarsely granular; the coloration of the whole animal is comparatively light. No. of pect. teeth 26; length of carapace $17\frac{2}{3}$ mm.

The Museum possesses adult males agreeing almost exactly in the dimensions of the different parts with Koch's figure of the type specimen. The whole of the upper surface of the first 6 segments of the terga is extremely finely shagreened, the granules, excepting a few at the sides, being individually almost invisible, unless magnified. Although these terga are stated by Koch to be smooth in the type specimen, I have no doubt as to the specific identity of our specimens and his.

The interocular area of the carapace is generally quite smooth in the adults of both sexes, though sometimes it is weakly or even coarsely granular in the anterior part; in the young it is nearly always granular anteriorly.

In general appearance the adult male greatly resembles that of *karrooensis*, Pur., but the brachium equals the humerus in length in *pallidipes*. The carapace is slightly longer than the first two

caudal segments, while the tail itself is much longer than the trunk; the abdominal sterna are quite smooth; the inner part of the upper surface of the hand is almost flat and nearly smooth; the inner edge of hand is nearly straight and strongly denticulate; the length of the hand-back considerably exceeds the breadth of the hand; the scape of the pectines is rectangular at the base, and toothed along its whole length; the genital operculum is transverse.

Measurements in Millimetres of an ad. ♂.—Total length 105; length of carapace $16\frac{1}{2}$, width 14; distance of eyes from anterior margin $11\frac{1}{3}$; width of hand 9; length of hand-back $9\frac{3}{4}$, of movable finger $23\frac{1}{2}$, of tail 60; width of first caudal segment 6, of fifth $4\frac{2}{3}$, of vesicle $5\frac{1}{3}$.

OPISTHOPHTHALMUS PERINGUEYI, Purcell,

Ann. S. Afr. Mus., i., p. 23, 1898, ♀ and ♂.

No exact locality is known for the type of this species, but I have recently received a large adult female, captured by Messrs. C. L. Leipoldt and R. Pattison on the Sneeuwkop Mt., in the Cedarberg Range, Clanwilliam Div., at a height of over 3,000 ft.

This specimen closely resembles the type from which, however, it differs somewhat in colour—the interocular area of the carapace, the upper surface of the hands, the vesicle, and the legs being dark olive-brown instead of reddish yellow. The last sternal segment is distinctly keeled on each side. Pectines with 16–17 teeth. Total length 110 mm.; length and width of carapace $14\frac{1}{2}$ mm.; width of hand $12\frac{2}{3}$ mm.; length of hand-back 9 mm. Basal joint of mandible provided on the inner side with four obovate lamellæ (modified hairs), which are not present in the type specimens.

OPISTHOPHTHALMUS KARROOENSIS, Purcell,

Ann. S. Afr. Mus., i., p. 1, pl. i., fig. 1, pl. ii., fig. 2, 1898.
♂ and ♀.

Area of Distribution.—Central and South-West Karroo, Cape Colony (Victoria West, Beaufort West, Prince Albert and Robertson Divisions).

(a) 1 ad. ♂ (dry), from Victoria West, alt. 4,100 ft. (*R. M. Light-foot*): No. of pect. teeth 28–29; length of carapace $13\frac{3}{4}$ mm.; seg. 5 of the abdominal sterna wrinkled and granular, seg. 4 wrinkled in the middle and granular at the sides, anterior segments nearly smooth.

(b) 10 ♀ (3 ad.) and 19 ♂ (4 ad.), from Beaufort West, alt. 2,850 ft. (*Rev. G. H. R. Fisk, J. P. Cregoe, F. Purcell*): No. of pect. teeth in ♀ 19–22, in ♂ 25–31; length of carapace in ad. ♀ $14\frac{1}{2}$ –16 mm., in ad. ♂ 13–14 mm.; seg. 5 of the abdominal sterna in the ♀ smooth or scarcely granular in the middle, weakly granular in the depressions at the posterior lateral angles; seg. 2–5 in the ♂ finely and densely granular throughout, or seg. 2–4 wrinkled in the middle.

(c) 8 ♀ (5 ad.) and 8 ♂ (3 ad.), from Prince Albert Village, alt. 2,120 ft. (*F. Purcell*): No. of pect. teeth in ♀ 19–22, in ♂ 24–31; length of carapace in ad. ♀ $14\frac{1}{4}$ –16 mm., in ad. ♂ $14\frac{3}{4}$ –15 mm.; seg. 5 of the abdominal sterna in the ♀ with a few weak mesial granules posteriorly, seg. 2–5 in ad. ♂ finely and densely granular throughout.

(d) 4 ♀ (1 ad.) and 7 juv. ♂, from Laingsburg, Prince Albert Div., alt. 2,128 ft. (*F. Purcell*): No. of pect. teeth in ♀ 19–22, in ♂ 24–30; length of carapace in ad. ♀ $15\frac{1}{2}$ mm.; seg. 5 of the abdominal sterna in the ad. ♀ thickly granular, smooth only along the anterior border.

(e) 20 ♀ (12 ad.) and 20 ♂ (9 ad.), from Ashton, Robertson Div. (*F. Purcell*): No. of pect. teeth in ♀ 15–19 (rarely 21), in ♂ 21–24 (rarely 27); length of carapace in ad. ♀ $11\frac{1}{2}$ – $13\frac{1}{4}$ mm., in ad. ♂ $11\frac{1}{2}$ – $12\frac{3}{4}$ mm.; seg. 5 of the abdominal sterna in the ad. ♀ perfectly smooth except in the shallow postero-lateral depressions, where it is usually provided with a few weak granules; seg. 2 and 3 in the ♂ smooth or nearly so, granular at the sides, seg. 3 sometimes granular along hind margin, seg. 4 and 5 densely and finely granular; width of hand in ♀ somewhat greater than the length of hand-back; under side of first caudal segment in the ♀ weakly granular, except quite anteriorly, where it is generally smooth; under side of humerus nearly smooth, with at most 6–9 small granules in the ♂, very sparsely granular in the ♀, although more granular than in the ♂. In other respects these specimens resemble the types.

OPISTHOPHTHALMUS GIGAS, Purcell,

Ann. S. Afr. Mus., i., p. 5, 1898, ♂ and ♀.

The probable locality of the type specimens is Warmbad (Nisbet Bath), in Great Namaqualand, German South-West Africa. The Museum has recently acquired a number of fine specimens of this giant species, collected by Mr. Max Schlechter, in Bushmanland, Cape Colony. These specimens differ from the types in a few points

and constitute *Var. β*. The specimens in the collection are as follows:—

A. *Principal Form*.—Eyes far back, their distance from anterior median edge of carapace $2\frac{3}{4}$ –3 times their distance from posterior edge. Ventral surface of abdominal and of anterior caudal segments in male furnished with exceedingly minute granules, although apparently smooth to the naked eye. North of the Orange River.

1 ad. ♀ (type) and 2 ad. ♂, probably from Warmbad (*W. Palgrave*): No. of pect. teeth in ♀ 24, in ♂ 24; length of carapace in ♀ 22 mm., in ♂ $21\frac{1}{4}$ –22 mm.

B. *Var. β*.—Eyes farther forward, their distance from the anterior median edge of carapace only 2 – $2\frac{1}{4}$ times their distance from posterior edge. Ventral surface of abdominal and anterior caudal segments perfectly smooth in ♂ (except at extreme lateral borders of sterna, which are minutely granular, as in principal form). Colour of trunk and cauda olive-green to olive-brown, of interocular area and hands yellow, of legs pale ochraceous. Young wholly dark (with the exception of the legs).

(a) 13 ♀ (4 ad.) and 6 ♂ (1 ad.) from Namies on the border between Namaqualand and Kenhardt Div., Great Bushmanland (*Max Schlechter*): No. of pect. teeth in ♀ 19–22, in ♂ 22–27; length of carapace in ad. ♀ $20\frac{1}{2}$ – $21\frac{1}{2}$ mm., in ad. ♂ $20\frac{2}{3}$ mm.; length of largest ♀ 156 mm., of ♂ 140 mm.

(b) 2 ♀ (1 ad.) from Naroep, Great Bushmanland, Namaqualand Div. (*Max Schlechter*): No. of pect. teeth 20–22; length of carapace in ad. ♀ 22 mm.; total length 160 mm.

(c) 2 juv. ♀ and 1 juv. ♂ from Jackalswater (half-way between Steinkopf and Henkries), Namaqualand Div. (*Max Schlechter*): No. of pect. teeth in ♀ 23–24, in ♂ 29. The largest female specimen is nearly full grown (length 115 mm.), and may be easily identified from the type specimen of *O. gigas*.

OPISTHOPHTHALMUS AUSTERUS, Karsch,

Mittheil. Münch. Ent. Ver., 1879, p. 128; Kraepelin, Revis. d. Skorp., ii., p. 94, 1894.

Area of Distribution.—Western part of the Great Karroo (Worcester Div.), Sutherland (?).

(a) 11 ♀ (6 ad.) and 2 ♂ (1 ad.) from Touws River Station, alt. 2,500 ft., Worcester Div. (*F. Purcell*): No. of pect. teeth in ♀ 15–18, in ♂ 21–23; length of carapace in ad. ♀ $11\frac{1}{4}$ – $12\frac{3}{4}$ mm. and only slightly exceeding that of first two caudal segments, in

ad. ♂ $11\frac{1}{3}$ mm., and considerably less than that of first two caudal segments; upper surface of hand coarsely granular throughout in the ♀; interocular area dark reddish brown, scarcely lighter than the sides of the carapace.

(b) 1 ad. ♀ (dry) from Matjesfontein, alt. 2,970 ft. (*R. Trimen*): No. of pect. teeth 15–16; length of carapace $12\frac{3}{4}$ mm., somewhat exceeding that of first two caudal segments; colour of carapace and granulation of hand as in the specimens from Touws River.

(c) 1 ad. ♀, old spirit specimen, labelled "Sutherland" (alt. 4,776 ft.) (*Rev. de Vries*): No. of pect. teeth 18; length of carapace $14\frac{2}{3}$ mm., slightly exceeding that of the first two caudal segments; inner part of upper surface of hands very much smoother in the middle than at the sides; interocular area much lighter than the sides of the carapace.

(d) 4 ♂ (3 ad.), no history attached: No. of pect. teeth 20–22; length of carapace 12– $12\frac{2}{3}$ mm., equalling that of the first and second caudal segments; interocular area much lighter than the sides of the carapace.

OPISTHOPHTHALMUS CHAPERI, Simon,

Soc. Ent. France (5), x., p. 387, 1880, ♂.

Area of Distribution.—The karroo-like country along the southern side of the great Langeberg Range from its eastern extremity westwards as far as Ashton (Worcester and Robertson Divisions).

(a) 4 ♀ (ad.) and 3 ♂ (2 ad.) from the base of the Rabiesberg, near Nuy River Station, Worcester Div. (*R. Francke* and *F. Purcell*): No. of pect. teeth in ♀ 13–16, in ♂ 17–19; length of carapace in ad. ♀ $12\frac{1}{4}$ – $13\frac{1}{2}$ mm., in ad. ♂ 12 – $12\frac{2}{3}$ mm.; interocular area and inner part of upper surface of hand (except quite distally) ochraceous; tail yellowish brown; last segment of the abdominal sterna in the ♀ with only a very few weak granules on the rudiments of the lateral keels.

(b) 8 ♀ (4 ad.) and 3 ♂ (young) from Ashton, Robertson Div. (*F. Purcell*): No. of pect. teeth in ♀ 13–15, in ♂ 17–18; length of carapace in ad. ♀ 13 – $14\frac{1}{2}$ mm.; interocular area and inner basal part of upper surface of hand reddish yellow, the hand much more extensively blackened in the ♀, tail dark reddish brown; last segment of the abdominal sterna in ♀ generally with a larger granulated area on each side in the region of the keels.

Only the male of this species has been described. The following are the principal characters of the *adult female*: *Colour* as in the

male. *Carapace* slightly longer than the first and second caudal segment (somewhat shorter than these segments in the ♂); interocular area almost entirely smooth, or weakly granular in the anterior part (in the ♂ finely granular over almost the whole surface or only on the anterior half). *Terga* granular throughout (more densely and finely so in the ♂). *Sterna* smooth and shiny, the last with the rudiments of lateral keels just visible and a few weak granules in the region of these keels, the mesial portion of the segment either quite smooth or more commonly, just perceptibly rugoso-granular. (In the ♂ the last segment is very densely and finely granular, with rudiments of lateral keels.) Humerus of *palpi* with the anterior border of upper surface as well defined as in the male; hands broad and stout, convex above, less hairy; finger-keel strong, smooth; inner part of upper surface of hand covered with numerous, low, flat, anastomosing elevations, secondary keels obsolete, indicated by black lines.

Measurements in Millimetres.—Total length 94; length of carapace $13\frac{1}{2}$, width $12\frac{2}{3}$; distance of eyes from anterior margin $9\frac{1}{4}$; width of hand 11; length of hand-back $7\frac{1}{3}$, of movable finger $12\frac{1}{2}$, of tail 49; width of first caudal segment $5\frac{1}{2}$, of fifth $3\frac{1}{2}$, of vesicle 4.

OPISTHOPHTHALMUS FOSSOR, Purcell,

Ann. S. Afr. Mus., i., p. 9, pl. iii., figs. 4, 4a, 1898, ♂ ♀.

Area of Distribution.—Divisions of Tulbagh and Worcester (western part).

(a) 14 ♀ (11 ad.) and 6 ♂ (5 ad.) from Schlanghoek, Worcester Div. (*R. Francke, F. Purcell*): No. of pect. teeth in ♀ 12–14 (rarely 16), in ♂ 17–20; length of carapace in ad. ♀ $12\frac{1}{2}$ – $13\frac{3}{4}$ mm., in ad. ♂ 11– $12\frac{1}{3}$ mm.

(b) 4 ♀ (1 ad.) and 2 ♂ (1 ad.) from the Roode Zands Mts. (eastern side), Tulbagh Div.: No. of pect. teeth in ♀ 12–15, in ♂ 19–21; length of carapace in ad. ♀ $11\frac{1}{4}$ mm., in ad. ♂ $11\frac{1}{3}$ mm.

(c) 3 ad. ♀ and 5 ♂ (4 ad.), old spirit specimens labelled “Witzenberg Mts.,” Tulbagh Div. (*T. H. Kleinschmidt*): No. of pect. teeth in ♀ 13–14, in ♂ 15–20; length of carapace in ♀ 11– $12\frac{1}{2}$ mm., in ad. ♂ $10\frac{1}{3}$ –12 mm.

(d) 1 ad. ♀ from the southern end of the Witzenberg Range, near Wolsley, Tulbagh Div. (*F. Purcell*): No. of pect. teeth 13 length of carapace 12 mm.

OPISTHOPHTHALMUS MACER, Thor.

O. capensis, C. L. Koch, Die Arachniden, iv., p. 89, fig. 308, 1837, ad. ♂.

O. macer, Thorell, Atti Soc. ital., xix., p. 236, 1877, ad. ♂; Kraepelin, Revis. d. Skorp., ii., p. 95, in Jahrb. Hamb. Wiss. Anst., xi., 1, 1894, ♂ ♀; Pocock, Ann. Mag. N. H. (6), xvii., pl. x., fig. 5 (1896), ♂ (hand).

O. fallax, Thorell, Atti Soc. ital., xix., p. 238, 1877, ♀.

Area of Distribution.—Along the south coast from False Bay eastwards as far as Port Elizabeth and probably further (according to Pocock also in Zululand); northwards the species extends along the Langeberg Range into the Divs. of Worcester and Ceres.

(a) 4 ♀ (3 ad.) and 5 ♂ (3 ad.) from Georgetown at the foot of the Outeniqua Range (*F. Purcell*): No. of pect. teeth in ♀ 12-14, in ♂ 14-19; length of carapace in ad. ♀ $10\frac{3}{4}$ -13 mm., in ad. ♂ $11\frac{2}{3}$ - $11\frac{3}{4}$ mm.; interocular area in both sexes merely roughened with pits, but not granular, on the convexities behind; the granulation on the sides of the carapace in the ♀ slightly but distinctly stronger and coarser near the lateral borders of the interocular area than elsewhere; colour of legs dark reddish brown in the ♂, almost black in the ♀. Thorell's type specimen appears to be some such form as this.

(b) 3 ad. ♂ from the town of Knysna and the Knysna Heads (*F. Purcell*): No. of pect. teeth 15-17; length of carapace 10-11 mm.; carapace and colour of legs as in the ♂ specimens from Georgetown.

(c) 1 ♀ from Port Elizabeth (*J. L. Drege*): No. of pect. teeth 12-13; length of carapace 11 mm.; granulation of carapace and colour of legs as in the ♀ specimens from Georgetown, secondary keels of hand much weaker than usual, in parts scarcely raised at all.

(d) 2 ad. ♀ and 2 ad. ♂ from the Hottentots Holland Mts. (Caledon side) (*F. Purcell*): No. of pect. teeth in ♀ 11-12, in ♂ 16-17; length of carapace in ♀ $11-11\frac{1}{2}$ mm., in ♂ $10\frac{1}{4}$ - $11\frac{1}{3}$ mm.; whole surface of carapace in the ♂ finely and evenly granular throughout, in the ♀ the interocular area is merely roughened with pits, but not granular, on the convexities behind; last segment of the abdominal sterna uneven or finely roughened in the middle; colour of legs as in the specimens from Georgetown.

(e) 2 ad. ♀ and 2 ♂ (1 ad.) from the village of Sir Lowries Pass, Stellenbosch Div. (*F. Purcell*): No. of pect. teeth in ♀ 11-12, in ♂ 15-17; length of carapace in ♀ $10\frac{1}{4}$ - $11\frac{1}{2}$ mm., in ad. ♂ $10\frac{1}{2}$ mm.; carapace as in the specimens from the Hottentots Holland Mts.; colour of the legs in ♂ reddish brown, in ♀ dark reddish brown.

(f) 4 ad. ♀ and 1 ad. ♂ from Rabiesberg (at the foot of the Lange-bergen near Nuy River Station), Worcester Div. (*R. Francke, F. Purcell*): No. of pect. teeth in ♀ 13–17, in ♂ 19–20; length of carapace in ♀ 11–12 mm., in ♂ 11 mm.; whole surface of carapace finely and evenly granular throughout in both sexes; colour of the legs ochraceous-brown in fresh specimens.

(g) 2 ad. ♀ from the village of Ceres (*R. M. Lightfoot and F. Purcell*): No. of pect. teeth 13–16; length of carapace in ad. ♀ $12\frac{1}{2}$ mm.; whole surface of carapace densely and evenly granular throughout; colour of the legs light ochraceous-brown, from the apex of femur to the distal end of the leg nearly black on the anterior, upper and posterior sides.

(h) 1 ad. ♀ from near Triangle Station (alt. 3,193 ft.), Wore. Div. (*R. M. Lightfoot*): No. of pect. teeth 15–16; length of carapace 14 mm.; granulation of carapace weaker on posterior part of interocular area; coloration of legs as in the specimens from Ceres (g).

I have no doubt as to the identity of Koch's *O. capensis* and Thorell's *O. macer*, notwithstanding the circumstance that Koch gives only 13 pect. teeth for his specimen. In some of our male specimens the number of these teeth is as low as 14.

The last segment of the abdominal sterna is either smooth or more or less granular at the sides, the latter being especially the case in the males. The under side of the humerus is either granular or smooth.

OPISTHOPHTHALMUS LATIMANUS, C. L. Koch,

O. latimanus, C. L. Koch, Die Arachniden, viii., p. 65, fig. 640, 1841, ♀; Kraepelin, Revis. der Skorp., ii., p. 91, 1894.

O. calvus, L. Koch, Verh. zool. bot. Ges. Wien, xvii., p. 233, 1867 (I have not seen this work); Kraepelin, *loc. cit.*, p. 93, ♀.

8 ♀ (5 ad.) and 7 ♂ (5 ad.) from Brakkloof, near Grahamstown, Albany Div. (*Dr. Schönland*): No. of pect. teeth in ♀ 11–13, in ♂ 14–18; length of carapace in ad. ♀ $12\text{--}14\frac{1}{4}$ mm., in ad. ♂ $10\frac{1}{4}\text{--}12\frac{3}{4}$ mm.

These specimens very much resemble Koch's figure of the type in their coloration, but the interocular area and tail are darker, being very dark reddish brown or almost black; the legs are dark reddish brown, their under surface and the vesicle yellowish brown. In the adult female the secondary keels on the inner part of the upper surface of the hand may be quite obsolete (except quite distally at the base of the finger), or they may be distinctly traceable to the base of the hand as a row of larger, low, anastomosing tubercles.

In the *female* the interocular area is either entirely smooth or the anterior half is roughened or very minutely granular; the second to sixth segments of the terga are very uneven but shiny, coarsely granular along hind margin and provided each with a smooth, longitudinal keel and with a large transverse elevation on each side; the last segment of the sterna is distinctly keeled, its surface roughened (also in the middle) with irregular pits and elevations and generally furnished at the sides with a few granules; the median inferior keels of the first caudal segment are well developed, nearly smooth or more or less crenulated; the finger-keel is either nearly smooth, or it is broken up into a row of granules.

The *male* of *latimanus*, which has not as yet been described, differs from the female in the following characters: *Carapace* only slightly longer than the first two caudal segments, the interocular area almost entirely covered with the minutest granules; *terga* finely shagreened without any shiny elevations; *sterna* with the first four segments finely roughened and often pitted in the middle (rarely the first segment nearly smooth), the fifth segment finely granular in the middle, more coarsely granular at the sides, keeled; inferior keels of first *caudal* segment always granular; the scape of the *pectines* rectangular at the base and toothed throughout its length; upper and anterior surfaces of *humerus* separated by a crest of larger granules; *hand* much smaller and relatively narrower, the inner part of the upper surface covered with granules which are not so flat but more isolated than in the ♀, resembling those on the outer part of the upper surface of hand; secondary keels generally distinct and well developed, sometimes weak; *operculum* much broader than long, completely cleft longitudinally.

Measurements in Millimetres of largest male. Total length 84; greatest length of carapace $12\frac{3}{4}$, width $11\frac{3}{4}$; distance of eyes from anterior margin 9; width of hand $9\frac{3}{4}$; length of hand-back $7\frac{1}{2}$, of movable finger 14, of tail 47; width of first caudal segment 6, of fifth $4\frac{1}{3}$, of vesicle $4\frac{1}{2}$.

According to Kraepelin, who examined the type specimens of *latimanus* and *calvus*, these two species differ solely in the possession by the latter of well-developed secondary keels on the hands and a fine granulation on the anterior part of the interocular area. Since both these characters often occur in the females of *latimanus*, I am compelled to consider *calvus* as synonymous with *latimanus*.

Pocock* records *latimanus* from the Murchison Range, Transvaal,

* Ann. Mag. N. H. (6) xvii., p. 238.

but from the position of the eyes, the reddish coloration, and other characters of his specimens, I am inclined to think they are merely specimens of *glabrifrons* with the last abdominal sternite smoother than usual.

OPISTHOPHTHALMUS PUGNAX, Thorell,

O. pugnax, Thor., Atti Soc. ital., xix., p. 232, 1877, ♂ ; Kraepelin, Rev. d. Skorp., ii., p. 105, 1894, ♂ ♀ .

O. curtus, Thor., loc. cit., p. 234, ♀ .

Area of Distribution.—Transvaal; also, according to Pocock, Natal, Basutoland and the south-eastern part of Cape Colony.

I have seen 7 ad. males and 2 ad. females of this species (some of them kindly lent by the Pretoria Museum). The granulation on the under surface of the last abdominal and anterior caudal segments appears to be the principal character which distinguishes this species from its allies (see Synoptic Table). The interocular area is rather uneven in both sexes, and in the female finely granular anteriorly or free of granules for the greater part—in the male finely granular throughout or smooth on the convexities behind, very much as in *latimanus*, the granulation being finer than in *macer*. In the male the inferior median crests of first caudal segment are either separate or the space between them is more or less filled up with coarse granulation. The terminal tarsi of the posterior legs have 2 or 1 external spines below. No. of pectinal teeth in ♀ 10–12, in ♂ 14–15.

OPISTHOPHTHALMUS GLABRIFRONS, Pet.

O. glabrifrons, Peters, Monatsber. Berl. Akad., 1861, p. 514 (I have not seen this work); Kraepelin, Revis. d. Skorp. ii., p. 104, in: Jahrb. Hamb. wiss. Anst., xi., 1, 1894.

O. lœviceps, Thorell, Atti. Soc. ital., xix., p. 228, 1877 ♂ (teste Kraepelin).

O. prædo, Thorell, ibid., p. 230 ♂ ; Kraepelin, loc. cit., p. 107, 1894, ♂ .

Area of Distribution.—Griqualand West (Cape Col.), Bechuanaland, Mashunaland as far north as the Zambezi (Pocock), Transvaal.

I have examined the following specimens:—

(a) 2 ad. ♂ and 3 ♀ (2 ad.) from the Transvaal (kindly lent me by the Pretoria Museum): No. of pect. teeth in ♀ 13–16, in ♂ 18–19; length of carapace in ad. ♀ $17\frac{1}{3}$ – $18\frac{1}{2}$ mm., in ad. ♂ 16 – $16\frac{1}{4}$ mm.; distance of eyes from anterior margin 2 – $2\frac{1}{5}$ times their distance

from hind margin; interocular area smooth and polished, granular only near anterior margin in both sexes; finger-keel granular; mesial part of last abdominal sternite in ♀ slightly roughened with very weak granulation. Colour reddish. Large specimens (length of largest ♂ and ♀ 112 mm.).

(b) 1 ad. ♀ (dry) labelled "Kimberley" (*A. Tucker*): No. of pect. teeth 13; length of carapace 15 mm.; median eyes, finger-keel, sterna and interocular area as in (a) above. Large specimen.

(c) 1 ad. ♂ (dry) from Kanga, near Mafeking, Bechuanaland (*Miss M. Good*): No. of pect. teeth 17; length of carapace $11\frac{1}{4}$ mm.; finger-keel and median eyes as in (a) above; interocular area minutely granular in anterior half. Smaller (total length 75 mm.).

(d) 2 ad. ♂ from Mazoe, Mashunaland (*J. Ffolliot Darling*): No. of pect. teeth 15–17; length of carapace $10-10\frac{3}{8}$ mm.; finger-keel nearly smooth in distal part for $\frac{1}{3}-\frac{1}{2}$ of its length; interocular area very finely granular, smooth only on the convexities behind; eyes as in (a). A dwarf form (total length of largest specimen only 67 mm.).

(e) 2 ad. ♀ and 2 ♂ (1 ad.) from the Transvaal (kindly lent by the Pretoria Museum): No. of pect. teeth in ♀ 11–12, in ♂ 13–15; length of carapace in ad. ♀ $12-12\frac{1}{4}$ mm., in ad. ♂ 10 mm.; distance of eyes from anterior margin $2\frac{1}{5}-2\frac{1}{3}$ times their distance from posterior margin; finger-keel in the ♂ smooth in the distal half but granular in the proximal half, in the female either nearly smooth throughout or almost entirely granular; secondary keels of hand in ♂ partially distinct, granular; interocular area almost entirely smooth and polished in both sexes. In the female a large portion of the upper surface of the hand (the inner basal portion) is almost smooth, being covered only with low, anastomosing elevations instead of isolated granules; segments 1–4 of sterna in the ♂ minutely granulated and finely wrinkled in the mesial parts; the inferior median crests of the four anterior caudal segments quite obliterated in the ♂ by the dense granulation of the under surface; posterior tarsi with one or no external spine on the under side. Rather small specimens (length of ♂ and ♀ 74 mm., S. A. Mus. Reg. No. 3745).

(f) 4 ad. ♀ and 3 ad. ♂ from the Transvaal (kindly lent by the Pretoria Museum): No. of pect. teeth in ♀ 14–15, in ♂ 15–19; length of carapace in ♀ $13\frac{1}{2}-15\frac{1}{2}$ mm., in ♂ $13-13\frac{1}{3}$ mm.; eyes farther back than in any of the preceding specimens, their distance from front margin of carapace $2\frac{2}{3}$ to nearly three times their distance from hind margin; finger-keel nearly smooth, rarely, in the ♀, the

proximal half granular; interocular area in ♀ entirely smooth or with a few minute granules anteriorly, in ♂ finely granular throughout, except quite posteriorly on the convexities; last abdominal sternite in ♀ coarsely granular in the middle. In the ♀ the terga, at least the anterior ones, are more or less granular, while the hands are almost devoid of isolated granules on the inner basal portion of the upper surface, resembling those of the previous specimens (*e*). Secondary keels of hands in ♂ often very distinct and almost smooth. Tarsi with 0-1 external spines below in addition to the four on the outer terminal lobe (as in *glabrifrons* generally). Colour of the lighter parts more ochraceous than reddish. Large, up to 101 mm. in length. Although these specimens differ remarkably from the normal forms, I cannot consider them other than a well-marked variety of the widely distributed and variable *glabrifrons*. The position of the median eyes is very liable to vary in local races generally, while both in this character and in the smoothness of the finger-keel this form is strongly approached by the previous specimens (under (*e*) above), which are intermediate between the normal form and the specimens here under consideration. The remaining differences are of no specific value. (S. A. M. Reg. No. 2999).

The form described by Thorell as *O. prædo* evidently closely resembles the form (*f*) but differs in having the finger-keel granulated as in the normal *glabrifrons*. The type specimen has been elaborately described by Thorell and again quite recently by Kraepelin. I cannot, however, discover from their descriptions a single reason for separating this form from *glabrifrons*, although Kraepelin seems to think it more nearly related to *pugnax*. The characters which these authors appear to rely upon for separating *prædo* from *glabrifrons* are the finely granular interocular area, the fewer pectinal teeth (14-15) and the stronger secondary crests of the hands in the former form. The position of the median eyes is also farther back, as in the form (*f*) above, and the hands are slightly narrower. Now it is quite impossible to utilise these characters alone for separating the species from *glabrifrons*, and unless *prædo* possesses other and more reliable differential characters than those enumerated—which is highly improbable, for they would have been mentioned—it must be considered merely as a variety of *glabrifrons*, intermediate between the normal form and the form (*f*).

The granulation of the first four abdominal sternites in the ♂ varies much. In the males described under (*f*) all these sternites are much roughened, also in the mesial part, being densely and transversely wrinkled; the four sternites may be almost entirely

devoid of granules in the mesial parts, or the fine wrinkles may be crenulated or even split up into granules in places in the posterior segments, and in one specimen the granules predominate in the third and fourth sternites, are plentiful in the second, and there are even a few in the first sternite. In the ad. ♂ mentioned under (e) above the sterna are equally weakly granular and finely wrinkled in the mesial part of each of the first four segments. In the remaining ♂ specimens the first four abdominal sternites vary as above, excepting that the first is often almost smooth, and always devoid of granules in my specimens. In one ad. ♂ specimen all the sternites, including the fifth, are entirely devoid of granules in the mesial part, being transversely furrowed instead.

The length of the carapace in the ad. ♂ is either equal to that of the first two caudal segments, or it somewhat exceeds the latter.

OPISTHOPHTHALMUS CRASSIMANUS, n. sp.

Adult Females from Jackalswater (recently killed, in spirits).

Colour.—Brownish yellow or yellowish brown; carapace unicoloured or the interocular area slightly paler; the anterior part of each tergal segment, the distal portion of the mandibles and the vicinity of each group of eyes on the carapace blackened or olive-green; the granules on the crests of the palps and on the upper surface of the hands reddish brown or nearly black; anterior caudal segments and last abdominal segment with four longitudinal black stripes on lower surface; fourth caudal segment olivaceous or blackened below and at the sides, generally with pale patches between the keels; fifth caudal segment blackened or olivaceous on all sides, with numerous small pale spots between the keels; vesicle infusate, with two pairs of pale longitudinal stripes; maxillary processes of second pair of legs somewhat infusate along its median half; legs pale yellow, their anterior surface brownish in the middle; fingers of palps reddish brown or nearly black.

Carapace longer than wide, as long as the first and second caudal segment and three-fourths of the third; the greater part of the upper surface perfectly smooth and shiny from the anterior to the posterior margin, only the deflected lateral parts, and occasionally also the median groove, finely and often very sparsely granular, without any coarse granulation along the lateral borders of the interocular area; length of carapace $3\frac{1}{4}$ – $3\frac{1}{2}$ times the distance of median eyes from the posterior edge; median groove widened just in front of the median

eye-tubercle, not forked anteriorly (rarely with a partially developed fork).

Terga smooth and shiny, the last segment granular at the sides.

Sterna.—The fifth segment with low transverse granules in the middle, the third and fourth segments often with traces of a weak granulation in the middle, the sternal segments otherwise smooth and shiny.

Cauda weak and very short, being only $2\frac{2}{3}$ times as long as the carapace; its upper surface smooth, or with a few granules in segment 1; upper crests weak, almost smooth, rarely weakly granular, terminating posteriorly with an enlarged tooth in segments 2-4, obsolete (rarely normally developed) in segment 5; upper lateral crests nearly smooth or weakly granular, absent from posterior part of fifth segment; inferior lateral keels weakly granular or nearly obsolete in segments 1 and 2, weak and nearly smooth in segment 3, granular in segment 4, serrated in segment 5; infero-median keels replaced by coarse, broadly transverse granules (similar to those on the last sternite) in segments 1 and 2, coarsely or weakly granular, often scarcely defined, in segments 3 and 4, serrated in segment 5; sides of the cauda smooth or nearly so between the keels; ventral surface of fifth and generally also of fourth segment coarsely granular between the crests; vesicle distinctly granular at the base below for about $\frac{1}{5}$ — $\frac{1}{3}$ of its length.

Palps very like those of *O. granifrons*; crests of the humerus coarsely granular, the anterior upper crest not well defined, the upper and anterior surfaces granular, the under surface with a few coarse granules near posterior edge; upper crest of brachium weakly or coarsely granular, posterior surface of brachium coarsely granular on lower half, more weakly granular or nearly smooth on upper half; hands very broad and robust with short fingers, cordate at base, strongly convex above; whole upper surface of hands covered with coarse granules, those nearer the inner edge being flatter and broader, those nearer the outer edge more conical; finger-keel very weak, composed of a row of larger black granules; the three secondary keels of the upper surface obsolete or nearly so, generally indicated by rows of blacker, sometimes slightly enlarged, granules; inner edge of hand sharply granular in the distal part.

Legs.—Anterior surface of posterior femora finely granular; lower edge of femora coarsely granular; tarsi of fourth pair of legs with 3-5 internal and no external spines below, in addition to the 5 internal and 3 external spines on the terminal lobes; tarsi of third pair of legs with 3-4 internal and no (very rarely 1) external spines

below, in addition to the 5 internal and 4 (rarely 3) external spines on the terminal lobes; superior process much shorter than the lateral lobes.

Operculum much broader than long, emarginate behind but not cleft longitudinally.

Pectines with the scape rounded at base behind and free of teeth for about two-fifths of its length.

Measurements in Millimetres.—Total length 88; length of carapace 14; width of carapace 13; distance of eyes from anterior edge 9; width of hand $12\frac{3}{4}$; length of hand-back $8\frac{1}{2}$, of movable finger 11, of tail 35; width of first caudal segment 5, of fifth caudal segment $3\frac{1}{2}$.

Adult Males (recently killed, in spirits).

Differential characters :—

Carapace as long as the first and second caudal segments and about one-fourth of the third, its upper surface sometimes with a few very minute granules before and behind the median eye-tubercle.

Terga roughened with exceedingly fine granulation, the seventh segment coarsely granular at the sides.

Sterna.—All the segments very coarsely granular, especially in the middle, often smooth at the anterior lateral angles in front of the spiracles, the granules transverse and coarsest in the mesial part of the last segment.

Cauda moderately stout, all the crests, especially those on the under surface, coarsely granular, the under surface of first two segments very coarsely granular, like the last sternal segment.

Hands paler in colour, robust, strongly convex above, longer and narrower than in the female, the granulation on the inner part of upper surface more conical; breadth of hand considerably exceeding the length of hand-back.

Operculum much broader than long, completely cleft longitudinally.

Pectines with the scape rounded at the base behind, and free of teeth for nearly one-fourth of its length.

Measurements in Millimetres.—Total length 85; length of carapace 13; width of carapace $12\frac{1}{2}$; distance of eyes from anterior edge 9; width of hand $10\frac{1}{2}$; length of hand-back $8\frac{1}{4}$, of movable finger $13\frac{1}{2}$, of tail 43; width of first caudal segment $5\frac{1}{2}$, of fifth caudal segment 4.

Localities.—(a) Types: 33 ♀ (22 ad.) and 6 ♂ (3 ad.) from Jackalswater, Namaqualand Div. (midway between Steinkopf and

Henkries): No. of pect. teeth in ♀ 13–16, in ♂ 19–23; length of carapace in largest ad. ♀ $14\frac{1}{2}$ mm., in the adult ♂ $12\frac{1}{2}$ –13 mm. (The ad. females are not easily distinguishable from the nearly adult ones in this species.)

(b) 9 ♀ (1 ad.) and 7 ♂ (1 ad.) from Grasmond, Namaqualand (midway between Steinkopf and Jackalswater): No. of pect. teeth in ♀ 13–17, in ♂ 19–23; length of carapace in ad. ♀ $12\frac{1}{2}$ mm., in ad. ♂ 13 mm. In these and in the type specimens there are no lamellate modified hairs on the inner side of basal mandibular joint.

Var. β.—Mr. Schlechter also collected a number of other specimens, differing slightly from the type, chiefly in the much larger size (length of carapace in ad. ♂ $16\frac{1}{4}$ – $17\frac{3}{4}$ mm., in ♀ up to $18\frac{1}{3}$ mm.), and in the relatively narrower hands (width of hand in ad. ♂ often scarcely exceeding length of hand-back. Lamelliform modified hairs very often present on inner side of basal mandibular joint. Specimens were collected at the following localities, all in Great Bushmanland:—

(a) Aggeneys, Great Bushmanland, Namaqualand Div. (*M. Schlechter*).

(b) 6 ad. ♀ and many young from Gams, Great Bushmanland, Namaqualand Div. (*Max Schlechter*): Length of carapace in largest ♀ 17 mm.; tarsi of fourth pair of legs occasionally, though rarely, with 4 spines on the external terminal lobe.

(c) 2 ad. ♂, about 7 ad. ♀, and numerous young from Kykgat, Great Bushmanland, Namaqualand Div. (*Max Schlechter*): Length of carapace in largest ♀ 18 mm., in ad. ♂ $16\frac{1}{4}$ – $17\frac{1}{4}$ mm.

(d) 10 ad. ♀ and many young from Houmoed, Great Bushmanland, Kenhardt Div. (*Max Schlechter*): Length of carapace in largest ♀ $18\frac{1}{3}$ mm.; third tarsus in one specimen with only 3 spines on external lobe.

(e) 6 ad. ♀, 2 ad. ♂ and many young from Rooibank, Great Bushmanland, Kenhardt Div. (*Max Schlechter*): Length of carapace in ad. ♂ 17 – $17\frac{3}{4}$ mm., in ♀ up to 18 mm.; fourth tarsus very rarely with 4 spines on the external lobe. I append the measurements of the two largest specimens: *Adult female*.—Total length 113; length of carapace 17, width 17; distance of eyes from anterior edge $11\frac{2}{3}$; width of hand $16\frac{1}{2}$; length of hand-back 12, of movable finger $16\frac{2}{3}$, of tail 49; width of first caudal segment 6, of fifth $4\frac{1}{5}$. *Adult male*.—Total length 115; length of carapace $17\frac{3}{4}$, width 17; distance of eyes from anterior edge $11\frac{2}{3}$; width of hand $12\frac{3}{4}$; length of hand-back $11\frac{3}{4}$, of movable finger $22\frac{1}{2}$, of tail 59; width of first caudal segment $7\frac{1}{2}$, of fifth $5\frac{1}{4}$.

(f) De Neus, Great Bushmanland, Kenhardt Div. (*M. Schlechter*).

Notwithstanding the absence of the forked groove and of the coarse granulation on the carapace, this species is nearer to *O. granifrons* than to any other. The palps, the pectines, the armature of the terminal tarsi, and the granulation of the cauda and sterna are very similar in both species. *O. granifrons* was also found, though in much fewer numbers, in some of the localities where *O. crassimanus* occurs (at Grasmond and Jackalswater).

OPISTHOPHTHALMUS LONGICAUDA, n. sp.

Adult Males (recently killed, in spirits).

Colour.—Carapace and cauda ochraceous; vesicle, legs, and palps pale-yellow; fingers, mandibles, and terga dark olive-green or black; sterna dark or pale.

Carapace rather depressed, slightly longer than broad, considerably shorter than the first two caudal segments taken together; anterior margin truncated, not emarginate in the middle; median groove widened into a shallow depression in front of the eye-tubercle, not forked anteriorly; sides of the carapace, even at the posterior angles, coarsely granular, especially along the borders of the interocular area; interocular area for the greater part nearly smooth, sparsely granular or smooth anteriorly; length of carapace about four and a half times the distance of median eyes from the hind margin; distance of these eyes from anterior edge $3\text{--}3\frac{1}{2}$ times their distance from hind edge.

Terga densely granular, coarsely so at the sides, especially in the last segment.

Sterna coarsely, densely, and evenly granular over the whole surface, the granules on the last segment larger than those on the anterior ones and often conical; no traces of keels.

Cauda strong and very long, four and a half times as long as the carapace; upper surface nearly smooth, sparsely granular in segment 1; upper crests coarsely granular, the terminal tooth enlarged in segments 2–4; upper lateral crests coarsely granular, terminating posteriorly in the middle of fifth segment; infero-lateral keels coarsely granular; infero-median keels obsolete in the anterior segments, granular in the posterior ones; under surface of cauda densely and coarsely granular in segments 1 and 2, sparsely granular between the keels in segments 3–5; sides of the cauda coarsely granular between the keels in segments 1 and 2, sparsely so or nearly smooth in segments 3–5; vesicular segment much shorter

and broader than the fifth caudal segment, smooth; fifth caudal segment (measured along the side) somewhat longer than or equal to the carapace. (In the male of *O. karrooensis* the cauda is less than four times the length of the carapace, and the fifth caudal segment is considerably shorter than the carapace, and at least not longer than the vesicular segment.)

Palps.—Humerus shorter than the carapace (in *O. karrooensis* it is somewhat longer); all the crests of the humerus coarsely granular, its upper surface very coarsely granular in the posterior part, nearly smooth in the anterior part, anterior surface flat, with a few very coarse and some small granules and with very strongly defined upper and lower crests, under surface smooth. Upper crest of brachium coarsely granular, upper surface more or less distinguishable and separated by a crest from posterior surface, the posterior surface elevated crest-like along the middle with rows of coarse granules. Hands pilose, very long and slender, the length of hand-back much exceeding the breadth of hand; inner part of upper surface of hand flat, almost smooth, without traces of secondary keels; finger-keel strong, nearly smooth or weakly crenulated; inner edge of hand denticulate; outer part of upper surface of hand with a row of granules along the middle and another near the lower edge, otherwise smooth; the outer and inner parts of the upper surface of the hands are inclined almost at right angles to each other (as in the male of *O. karrooensis*).

Legs.—Posterior femora minutely granular on anterior surface; lower edges of all the femora and the upper edges of the posterior ones with a row of coarse granules; tarsi of the last two pairs of legs with 3-4 external and 5-7 internal spines below, in addition to the 4 (sometimes in last pair only 3) external and 5 internal spines on the terminal lobes; superior process much shorter than the lateral lobes.

Operculum transverse, much broader than long, completely cleft longitudinally.

Pectines extending scarcely to the middle of the trochanters of the fourth pair, and furnished with 18-21 teeth; scape rounded at the base behind and free of teeth for from $\frac{1}{4}$ - $\frac{1}{3}$ of its length.

Measurements in Millimetres.—Total length 104; length of carapace $14\frac{2}{3}$; width of carapace $14\frac{1}{2}$; distance of eyes from anterior margin $10\frac{1}{2}$; length of humerus 14; width of hand 8; length of hand-back 9, of movable finger $17\frac{1}{2}$, of tail $64\frac{1}{2}$, of fifth caudal segment (measured along the sides) 15, of vesicular segment $11\frac{3}{4}$; width of first caudal segment $5\frac{1}{2}$, of fifth caudal segment 4, of vesicle 5.

Adult Females (recently killed, in spirits).

The female shows the following differential characters:—

Carapace truncated or widely sinuate in front, scarcely shorter than the first and second caudal segments (measured along the sides).

Terga.—Segments 1–6 smooth, granular only at the sides, segment 7 smooth anteriorly.

Sterna smooth, finely granular only at the extreme lateral borders, the last segment somewhat weakly granular, but much less densely so than in the male.

Cauda scarcely weaker than in the male, long, $3\frac{3}{4}$ times as long as the carapace; infero-lateral keels almost smooth or weakly crenulated in anterior segments; granulation of the under surface of the first two caudal segments like that of the last abdominal segment; fifth caudal segment very long, its length (measured along the side) a little less than that of the carapace (by about $1\frac{1}{2}$ –2 mm.); vesicle very much shorter than the fifth segment.

In *O. karrooensis* the cauda is about 3 – $3\frac{1}{3}$ times as long as the carapace in the female, the fifth caudal segment is much shorter than the carapace (by about 3 mm.), and the vesicle is distinctly longer than the fifth segment.

Palps.—Humerus much shorter and stouter, much shorter than the fifth caudal segment (in *karrooensis* the humerus is longer than the fifth caudal segment). Hand less hairy, very stout, its width considerably exceeding the length of hand-back; the upper surface strongly convex, not flattened, nearly smooth.

Operculum cordate, slightly broader than long, not cleft longitudinally.

Pectines extending a little beyond coxæ, with 15–17 teeth, the scape free of teeth at base for about $\frac{2}{3}$ of its length.

Measurements in Millimetres.—Total length 120; length of carapace $16\frac{1}{4}$, width 16; distance of eyes from anterior margin 12; length of humerus 12; width of hand 12; length of hand-back $9\frac{3}{4}$, of movable finger 16, of tail 63, of fifth caudal segment (measured along the side) 15, of vesicular segment 12; width of first caudal segment $6\frac{1}{2}$, of fifth $4\frac{1}{3}$, of vesicle $5\frac{1}{4}$.

Locality.—(a) Types: 4 ♂ (3 ad.) and 5 ♀ (4 ad.) from Naroep, Great Bushmanland (*Max Schlechter*).

Further localities are:—

(b) 1 ad. ♂ from Wortel, near Naroep (*Max Schlechter*).

(c) 1 juv. ♂ from Hunitsamas, near Ramond's Drift on the Orange River, Bushmanland.

This handsomely coloured species is very closely related to *O. gigas* and *O. karrooensis*. In *O. longicauda* the palps are relatively shorter, while the cauda is relatively much longer than in *O. karrooensis*, the granulation on the carapace and especially on the terga and sterna is coarser, the basal angle of the pectines is not rectangular in the male, and the vesicular segment is relatively much shorter; the lateral margins of the carapace are less parallel than in *karrooensis*, converging towards the front as in *gigas*. But the main difference lies in the hands of the female, which are flattened above and as broad as the hand-back is long in *karrooensis*, but strongly convex and much broader in *longicauda*. On the other hand, *longicauda* and *gigas* resemble each other, and differ from *karrooensis* in not possessing the series of wedge-shaped lamellæ (Pocock's stridulating organ) on the inner side of the basal joint of the mandibles. In *O. gigas* the hand of the female is also convex above, the carapace narrowed in front, and the scape of the pectines not rectangular at the base in the male. *O. gigas* is easily distinguished, however, by its smooth abdominal sterna and the relatively shorter tail.

OPISTHOPHTHALMUS PATTISONI, n. sp.

Female (recently killed, in spirits).

Colour.—Whole animal very dark reddish brown; the posterior (inner) surface of the legs, the under side of the palps, the vesicle, the interocular area, and the inner part of the hand above somewhat lighter; the crests and fingers of the palps, the coarser granules on the sides of the carapace, and the maxillary processes of the first two pairs of legs black.

Carapace scarcely longer than wide, as long as the first two caudal segments taken together; its interocular area large, quite smooth and polished, finely punctate; sides of the carapace coarsely granular only in the anterior half, in the posterior half the granules are much less coarse, although still visible to the unaided eye, and there are no very coarse granules bordering the sides of the interocular area behind the middle of the carapace; the area round the median eye-tubercle nearly smooth; distance of median eyes from posterior margin contained $3\frac{1}{2}$ times in the total length of the carapace; anterior fork of median groove obsolete.

Terga finely granular at the sides, shiny, the anterior segments finely punctate and smooth in the middle, the posterior ones finely roughened in the middle, last segment coarsely granular at the sides.

Sterna.—All the segments smooth and polished, the last with a

weak keel and a shallow depression between this and the lateral edge on each side behind.

Cauda long, its upper surface granular in the anterior segments, smooth or nearly so in the posterior ones; upper crests granular, the terminal tooth not enlarged nor spiniform; upper lateral crests well developed, granular, absent from the posterior half of the fifth segment; infero-lateral and median crests distinct and smooth or nearly so on the anterior segments, granular on the fourth, and serrated on the fifth; sides of the cauda minutely and sparsely granular in the lower part, somewhat more coarsely so in the upper part; under surface smooth in segments 1 and 2, with a few minute granules in segments 3 and 4, and rather coarsely granular in segment 5 between the crests; vesicle with a few minute granules at the base below. *Cauda* four times the length of the carapace, rather slender; width of the first segment equal to its length along the upper median line, width of the second segment considerably less than the length along this line; length of fifth segment considerably exceeding the breadth of the hand.

Palps.—Crests of the humerus, its upper, anterior, and lower surfaces coarsely granular, the upper anterior crest strong, composed of a row of coarse granules. Upper crest of brachium weakly crenulated, nearly smooth in places; the posterior surface roughened, with several longitudinal, roughened crests. Hands broad, robust, cordate at base; inner part of upper surface moderately convex, thickly covered with low, rounded, anastomosing, punctated elevations, and ornamented with a network of black pigment; the secondary keels represented by two black lines; outer part of upper surface of hands densely and coarsely granular, without secondary keel; finger-keel strong and smooth; inner edge of hand bluntly granular.

Legs.—Anterior surface of femora minutely granular, lower edge of three anterior femora more coarsely granular. Tarsi of the third and fourth pair of legs with 1–2 external and 4–5 internal spines below, in addition to the 4 external and 5 internal spines on the terminal lobes; these lobes scarcely or not much longer than the well-developed superior process.

Operculum sub-triangular, much broader than long, emarginate posteriorly, but not cleft longitudinally.

Pectines with 12 teeth (14 in the young female), scape rounded at the base behind and free of teeth for about one-third of its length.

Measurements in Millimetres.—Total length 90; length of carapace $12\frac{2}{3}$; width of carapace $12\frac{1}{2}$; distance of eyes from anterior margin 8;

width of hand $10\frac{1}{4}$; length of hand-back $7\frac{1}{2}$, of movable finger $13\frac{1}{2}$, of tail 50, of fifth caudal segment (measured along the sides) 12; width of first caudal segment 5, of fifth caudal segment $3\frac{1}{2}$.

Male (recently killed, in spirits).

Differential characters :—

Colour of the palps lighter.

Carapace considerably shorter than the first two caudal segments taken together, the granulation of the sides less coarse, and the area round the eye-tubercle rougher than in the female.

Terga not shiny, densely covered with an exceedingly minute granulation, the last segment only with coarse granulation towards the sides.

Sterna.—Segments 1–4 minutely granular at the extreme lateral borders, fifth segment scarcely roughened in the lateral part, smooth in the middle.

Cauda long, $4\frac{3}{4}$ times the length of the carapace, rather slender, scarcely stouter than in the female; width of first caudal segment slightly less than its length along the upper median line; length of fifth segment considerably exceeding the length of carapace.

Palps.—All the segments longer; under side of humerus less granular. Hands very pilose, much slenderer than in the female, the fingers very long; inner part of upper surface nearly flat, concave distally, nearly smooth, the numerous elevations being scarcely perceptibly raised, the secondary keels absent, except quite distally; inner edge of upper surface denticulate; outer part of upper surface of hand with some granules along the middle and alongside of lower edge, otherwise nearly smooth; breadth of hand equal to the length of hand-back.

Operculum transverse, much broader than long, completely cleft longitudinally.

Pectines with 18 teeth (17–18 in the young male), the scape rectangular at base behind and therefore toothed along its whole length.

Measurements in Millimetres.—Total length 89; length of carapace 11; width of carapace 11; distance of eyes from anterior edge $7\frac{1}{4}$; width of hand 7; length of hand-back 7, of movable finger 15, of tail 54, of fifth caudal segment (along the side) $12\frac{1}{4}$; width of first caudal segment 5, of fifth caudal segment $3\frac{1}{2}$.

Locality.—One adult and 1 young female, 1 adult and 1 young male from the Sneeuwkop Mountain in the Cedarberg Range, Clan-

william Division, collected by Mr. R. Pattison, after whom I have much pleasure in calling it.

This scorpion belongs to the group comprising *fossor*, *chaperi*, *macer*, and *intermedius*. The granulation on the sides of the carapace is intermediate in coarseness between the fine granulation of *macer* on the one hand and the extremely coarse granulation of *fossor*, *chaperi*, and *intermedius* on the other. The new species appears to be most nearly related to *intermedius*, and agrees closely in most points with Kraepelin's description of the latter. The proportions and structure of the hand appear to be the same, the hand being relatively much narrower in both species than in *fossor*, *chaperi*, or *macer*. The main differences between them appear to be (1) the sides of the carapace are much less coarsely granular in *pattisoni* than in *intermedius*, (2) the tail is relatively much longer in *pattisoni*, its length being 5 times the breadth of the hand in the female and $7\frac{3}{4}$ times in the male, while in *intermedius* it is only 4 times in the female and 6 times in the male. The anterior tergal segments in the female are smooth in the middle in *pattisoni* but finely granular in *intermedius*, and the legs are nearly black in *pattisoni* but yellow in *intermedius*.

In the unusual length of the caudal segments *O. pattisoni* closely resembles *O. longicauda*, although these two species do not appear to be closely related.

The following South African species of *Opisthophthalmus* are unknown to me, at least in the adult stage:—

(1) *O. colesbergensis*, Sim., Soc. Ent. Fr. (5), x., p. 388, 1880. Colesberg, Cape Colony. Either identical with or closely related to *O. austerus*, Karsch.

(2) *O. intermedius*, Kraep., Revis. d. Skorp., ii., p. 89, 1894. Cape Colony (no exact locality recorded). Closely related to *fossor* and *chaperi*, differing from the former in having yellow legs and no secondary keels on the hands, and from the latter in the possession of well-developed, smooth, inferior, median keels on the first caudal segment. The proportions of the hands are those of *pattisoni*, Purc.

(3) *O. nitidiceps*, Pocock, Ann. Mag. N. H. (6), xvii., p. 243, 1896. Port Elizabeth. The South African Museum possesses only a single young specimen of this species (*J. L. Drege*).

(4) *O. breviceps*, Poc., *ibid.*, p. 244. No locality known. Resembles *O. glabrifrons*, from which it differs in having all the abdominal sternites, including the first, thickly and uniformly

granular in the male; the posterior tarsi, also, have 2 external spines below.

Synopsis of the Species of OPISTHOPHTHALMUS

in the collection of the South African Museum.

A. Median groove of carapace with a well-developed Y-shaped fork in front, enclosing the anterior median depression.

A¹. Median eyes far forward, their distance from anterior margin not exceeding $1\frac{1}{2}$ times their distance from posterior margin. Bushmanland (Cape Colony), German South-West Africa, Rhodesia .. ♂ ♀ *O. carinatus* (Pet.).

B¹. Median eyes farther back. (A synopsis of the species referred to here has already been given on p. 30 of this volume.)

B. Median groove of carapace not distinctly forked (occasionally with a partially developed fork) in front.

a. Median eyes situated almost in the middle of the carapace. Bushmanland (Cape Colony), German South-West Africa .. ♂ ♀ *O. wahlbergi* (Thor.).

b. Median eyes situated far behind the middle of the carapace.

a¹. Superior terminal lobe of tarsus at least as long as the lateral lobes, cylindrical and very thick, being several times as thick as the claws at their base and provided with half a dozen long stout bristles. Anterior surface of humerus very wide, almost as wide as the upper surface in the middle. German South-West Africa .. ♀ *O. flavescens*, Purc.

b¹. Superior lobe of tarsus slender or short. Anterior surface of humerus much narrower than the upper surface in the middle.

a². Sides of the carapace coarsely granular, at least in the anterior half.

a³. Operculum completely cleft longitudinally and provided with a pair of stylets on upper surface behind. (*Males*.)

a⁴. Superior crests of cauda with enlarged terminal tooth in segments 2-4. Length of hand-back considerably exceeding the breadth of hand in adult.

a⁵. Scape of pectines rectangular at the base behind and toothed along the whole posterior margin. Anterior caudal and posterior abdominal segments finely and densely granular below. Victoria West, Beaufort West, Prince Albert, and Robertson Divisions
♂ *O. karrooensis*, Purc.

b⁵. Scape of pectines obtuse or rounded at the base behind, the hind margin free of teeth for some distance at the base.

a⁶. Ventral surface of abdominal and anterior caudal segments densely and coarsely granular. Bushmanland (Cape Colony) ♂ *O. longicauda*, n. sp.

- b*⁶. Ventral surface of abdominal and anterior caudal segments smooth or covered with exceedingly minute scattered granules. Bushmanland (Cape Colony), German South-West Africa . . . ♂ *O. gigas*, Purc.
- b*⁴. Superior crests of cauda with the terminal spine not enlarged. Length of hand-back sub-equal to, or less than, the breadth of hand in adult.
- a*⁷. Sides of carapace coarsely granular only on the anterior half. Tail very long, the width of segment 1 slightly exceeding (sub-equal to) its length along the upper median line. Clanwilliam Division
♂ *O. pattisoni*, n. sp.
- b*⁷. Sides of carapace very coarsely granular as far back as the posterior transverse depressions. Tail stouter and shorter, the width of segment 1 considerably exceeding its length along the upper median line.
- a*⁸. First caudal segment densely and rather finely granular below, the median crests obsolete. Secondary crests of hands obsolete on inner part of the upper surface. Robertson and Worcester Divisions
♂ *O. chaperi*, Sim.
- b*⁸. First caudal segment with well-developed median crests, separated by a groove. Secondary crests of hands distinctly raised. Tulbagh and Worcester Divisions ♂ *O. fossor*, Purc.
- b*³. Operculum fused to a single piece along median line, without stylets. (*Females*.)
- a*⁹. Superior crests of cauda with enlarged terminal tooth in segments 2-4. Breadth of hand $1-1\frac{1}{3}$ times the length of hand-back in the adult, the upper surface almost smooth.
- a*¹⁰. Hands flattened above. Scape of pectines free of teeth at base behind for about two-sevenths of its length. Tail shorter, the length of segment 2 along upper median line sub-equal to its width . . . ♀ *O. karrooensis*, Purc.
- b*¹⁰. Hands convex above. Scape of pectines free of teeth at base behind for about one-third of its length. Tail longer, the length of segment 2 along upper median line at least one-fourth longer than the width.
- a*¹¹. Anterior caudal segments granular below
♀ *O. longicauda*, n. sp.
- b*¹¹. Anterior caudal segments smooth below
♀ *O. gigas*, Purc.
- i*. Superior crests of cauda with the terminal tooth not enlarged. Breadth of hand $1\frac{2}{3}$ -2 times the length of hand-back in the adult, the upper surface covered with low, broad, anastomosing tubercles.

- a*¹². Sides of carapace coarsely granular only in the anterior half. Tail long, the width of segment 1 sub-equal to its length along upper median line .. ♀ *O. pattisoni*, n. sp.
- b*¹². Sides of carapace very coarsely granular as far back as the posterior transverse depressions. Tail stouter and shorter, the width of segment 1 much exceeding its length along upper median line.
- a*¹³. Inferior median keels obsolete in first caudal segment. Secondary keels on inner part of upper surface of hands obsolete, indicated only by black lines .. ♀ *O. chaperi*, Sim.
- b*¹³. Inferior median keels well developed, separated by a distinct groove. Secondary keels of hands distinctly raised .. ♀ *O. fossor*, Purc.
- b*². Sides of the carapace finely granular, the granules near the lateral borders of the interocular area not much coarser than those elsewhere.
- a*¹⁴ ♀: Hand much depressed, its width not or scarcely exceeding the length of brachium along upper side; ♂: Length of hand-back considerably exceeding breadth of hand. Terminal tooth of superior caudal crests enlarged and spiniform.
Worcester and Sutherland Divisions ..
♂ ♀ *O. auusterus*, Karsch.
- b*¹⁴ ♀: Hand convex above and very wide, its width much exceeding the length of brachium along upper side; ♂: Length of hand-back less than the breadth of hand in adult.
- a*¹⁵. Tarsi of 4th leg with 3 (very rarely 4) spines on the external terminal lobe and no external spines on the under side; tarsi of 3rd leg with no (very rarely 1) external spine on the under side and 4 (very rarely 3) on the external terminal lobe; the superior terminal process of the tarsi very small, much shorter than the lateral lobes. Upper caudal crests with an enlarged terminal tooth in segments 2-4. Little and Great Bushmanland .. ♂ ♀ *crassimanus*, n. sp.
- b*¹⁵. Tarsi of 3rd and 4th legs with 4 spines on the external terminal lobe and 1-3 (sometimes 0 in *glabrifrons*) external spines on the under side as well, the superior process well developed, as long as the lateral lobes (rarely shorter). Terminal tooth of upper caudal crests not enlarged.
- a*¹⁶. Operculum completely cleft longitudinally and provided with a pair of stylets on upper surface behind. (*Males*.)
- a*¹⁷. Inferior median crests of segments 1 and 2 and often also of segments 3 and 4 of cauda distinctly defined only on the lateral side, the space between them being not grooved but filled

up and thickly covered with numerous, close-set, coarse granules. Terminal tarsi of last 2 pairs of legs with 0-1 (very rarely 2) external spines below, in addition to the 4 on the outer terminal lobe. Upper surface of hand densely covered with not very coarse granules, which are mostly more conical and isolated. Last abdominal segment below very densely granular (about 18-30 irregular transverse rows may be roughly counted between anterior and posterior margins in the mesial part), sometimes the mesial part merely roughened with numerous transverse furrows and pits. North-east of Cape Colony, Bechuanaland, Transvaal, Rhodesia ♂ *O. glabrifrons*, Pet.

*b*¹⁷. Inferior median crests of first 4 caudal segments very distinct (the space between them in segment 1 sometimes filled up with coarse granulation in *pugnax*). Tarsi of last 2 pairs of legs with 1-2 external spines below in addition to the 4 on the outer terminal lobe. Granulation of upper surface of hand much coarser (at least in proportion to the size of the hand).

*a*¹⁸. Inferior median keels of I. caudal segment composed of a series of 6-10 coarse or very coarse granules, the space between the keels sometimes filled up with equally coarse granulation, rendering the crests indistinct. Ventral surface of last abdominal segment coarsely or very coarsely granular (about 6-12 irregular transverse rows may be roughly counted between anterior and posterior margins in the mesial part). East of Cape Colony, Natal (teste Pocock), Transvaal ♂ *O. pugnax*, Thor.

*b*¹⁸. Inferior median keels of I. caudal segment smooth, crenulated or granular, the granules then more numerous. Mesial part of last abdominal segment smooth or finely roughened, or covered with fine and much more numerous granules.

*a*¹⁹. Upper surface of carapace densely granular, the granules on the interocular area generally as well formed and as large as those on the sides and coarser than those at the hind angles (the interocular area sometimes nearly smooth on the convexities behind and

the sides with coarser granulation). Inferior caudal keels quite smooth in anterior segments, not granular, at most interrupted by pits. Ventral surface of last abdominal segment smooth in the middle, rarely very finely granular. (Hands more or less yellow, with 4 black very strong keels above.) Southern Divisions of Cape Colony, Zululand (Pocock) ♂ *O. macer*, Thor.

- b*¹⁷. Interocular area partly or wholly covered with the finest dust-like granulation, which is not coarser than that at the hind angles of carapace. Inferior keels in anterior caudal segments more or less granular. Ventral surface of last abdominal segment finely granular in the middle. (Hands almost black above, with strong or weak secondary keels.) Albany Division ♂ *O. latimanus*, C. Koch.

- b*¹⁶. Operculum fused to a single piece along median line, without stylets. (*Females*.)

- a*²⁰. Inferior median crests of segment 1 and generally also of segments 2-4 of cauda distinctly defined only on the lateral side, the space between them being more or less filled up and covered with a number of coarse or weak granules. Tarsi as in ♂ (see under *a*¹⁷). Secondary crests of hand quite obsolete (except quite distally). Ventral surface of last abdominal segment either densely and coarsely granular, or the granulation weak or nearly (sometimes quite?) obsolete in the mesial part.

♀ *O. glabrifrons*, Pet.

- b*²⁰. Inferior median crests of cauda distinctly defined, the space between them in segment 1 not filled up with numerous granules (in *pugnax* there may be a couple of very coarse granules between the crests in segment 1). Tarsi as in ♂ (see under *b*¹⁷). Secondary crests of hand mostly well developed.

- a*²¹. Inferior median keels of 1st caudal segment composed of a series of 6-10 very coarse granules. Ventral surface of last abdominal segment with very coarse granulation. (If the whole surface be granular, not more than about 10 irregular transverse rows can be roughly counted between the anterior and posterior margins in the mesial part) ♀ *O. pugnax*, Thor.

*b*²¹. Inferior median keels of 1st caudal segment smooth or somewhat crenulate, but not composed of coarse granules.

*a*²². Granulation of carapace as in ♂ (see under *a*¹⁹). Ventral surface of last abdominal segment smooth and polished, at least in the mesial part, where it is never coarsely roughened. Inferior median crests of anterior caudal segments quite smooth. (Hands more or less yellow, with 4 distinct black keels above) . . ♀ *O. macer*, Thor.

*b*²³. Granulation of carapace as in ♂ (see under *b*¹⁹) or the carapace quite smooth. Ventral surface of last abdominal segment more or less roughened with coarse pits or coarse irregular elevations (sometimes smooth in the middle). Inferior median crests of anterior caudal segments smooth or weakly crenulated. (Hands almost black above.) ♀ *O. latimanus*, C. Koch.

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to the South African species of *Opisthophthalmus*, referred to in this paper. (The thick type denotes the page on which the species referred to is separately treated. Synonyms are in italics. Synopsis not included.)

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VI.—*Descriptive List of the Rodents of South Africa.*—By W. L. SCLATER, M.A., *Director of the South African Museum.*

THIS list of the South African Rodents has been drawn up for a book on which I am now engaged, on the South African Mammals, and it seemed worth while publishing it as a preliminary to the greater and more complete work.

The genera are arranged according to the list recently drawn up by Mr. Thomas (*Proc. Zool. Soc.*, 1896, p. 1012), and I have also made use of the new edition of Trouessart's *Catalogue of Mammals*, which has enabled me to trace a good many obscure references.

The synonymy is not complete ; only the more important references are given, and more especially to publications directly bearing on South African forms.

The descriptions and measurements are as far as possible based on specimens preserved in the South African Museum, and where a species is not represented in the collections, on the original description ; the dimensions are in inches and decimals of an inch in all cases.

No complete list of South African Mammals, much less of Rodents, has appeared since 1832 and 1833, when Smuts published his 'Enumeratio Mammalium Capensium,' and Andrew Smith his descriptive catalogue, the latter in the *South African Quarterly Journal* ; a catalogue of this sort, therefore, cannot fail to be useful to naturalists in South Africa, whatever its shortcomings.

For these I must ask the pardon of my fellow-workers ; but few realise the difficulties of working at a distance of 6,000 miles from Europe, with imperfect libraries and not a very abundant material.

All I can do is to hope that this list may be the foundation for a great deal of future work on this subject, which has been so strangely neglected for so many years.

The limits which I have somewhat arbitrarily fixed as the boundaries of South Africa are the Cunene River, dividing German South-West Africa from Angola on the west and the Zambesi River on the east, so that my territory includes the British colonies of the Cape of Good Hope and Natal, the South African Republic and the Orange Free State, Bechuanaland and Rhodesia, German South-West Africa, and that portion of Portuguese East Africa which lies south of the Zambesi.

It is highly probable that a considerable number of new forms remain to be discovered within this region: in the last few years a good many have been described by Mr. Thomas and by Mr. de Winton, especially from Rhodesia. The total number of species mentioned in this paper are 62; of these 44 are represented in the South African Museum; 18 are still wanting. In the following list only one new species is described: *Malacothrix pentonyx*, on p. 202.

FAMILY SCIURIDAE.

GEN. XERUS.

Xerus, HEMPRICH and EHRENBERG, Symb. Phys., i. (1832).
Type *X. rutilus*.

Fur harsh, often spiny; external ears short or absent; no cheek pouches; fore limbs with four toes, all clawed, of which the two middle ones are considerably larger than the others, and a rudimentary pollex with a flat nail; hind foot with five toes all clawed, all the claws long and nearly straight; skull large and broad, with very small postorbital processes.

Dentition.—i. 1/1 c. 0/0 p.m., 2/1 or 1/1 m. 3/3 = 20 or 22. Molars semi-hypsodont (*i.e.*, with high crowns) and lophodont (*i.e.*, with regular transverse ridges and valleys), not tubercular.

XERUS CAPENSIS, THE GROUND SQUIRREL.

Sciurus capensis, KERR, Linn. Anim. Kingd., p. 266 (1792); A. SMITH, S. Afr. Quart. Journ., ii., p. 127 (1834).

Sciurus namaquensis, LICHTENSTEIN, Cat. Rer. Nat., p. 2 (1793).

Sciurus levaillantii, KÜHL, Beitr. Zool., p. 67 (1820).

Sciurus setosus, SMUTS, Enum. Mamm. Cap., p. 33 (1832).

Xerus setosus, LAYARD, Cat. Mamm. S. Afr. Mus., p. 47 (1862).

Xerus capensis, JENTINK, Notes Leyd. Mus., iv., p. 48 (1882); NOAK, Zool. Jahrb., iv., p. 131, pl. iii., fig. 10 (skull), (1889) [Kalahari and Damaraland].

Description.—General colour above and on the sides pale rufous brown, sparingly speckled with black, the hairs being short, coarse, and close-lying; a narrow white stripe runs from the shoulders to the haunches, below dull white; skin black; head broad; whiskers black; eyes large and prominent with a dull whitish line above and below; ear conch completely absent, the ear being a narrow diagonal slit, half an inch in length; limbs somewhat paler than the body, with four claws on the fore and five on the hind feet, the thumb being shorter and bearing a rudimentary flat nail; the claws are large, nearly straight, and black in colour; tail a little shorter than the head and body, near the root coloured like the body, beyond very bushy and distichous, mixed black and white, the individual hairs being chiefly white with two distinct black bands.

Skull with the bony palate extending a quarter of an inch beyond the level of the posterior molars, nasals broad and zygomatic arches stout.

Incisors white, premolars 1/1 only.

Dimensions (from a skin).—Head and body 11·0; tail 9·0, with terminal hairs 10·0; hind foot 2·33; from ear-opening to nose 2·0; skull length about 2·0, breadth about 1·40; upper cheek teeth 49.

Distribution.—The central and drier parts of the Colony, extending northwards through the Kalahari and Bechuanaland to Matabeleland and Damaraland; not found far to the eastwards; the South African Museum possesses examples from Namaqualand, Colesberg, and Griqualand West in the Colony.

GEN. FUNISCIURUS.

Funisciurus (sub-genus), TROUESSART, Le Natur., i., p. 290 (1880). Type *F. lemniscatus*.

Paraxerus (sub-genus), FORSYTH MAJOR, Proc. Zool. Soc., p. 189 (1893). Type *F. cepapi*.

Fur soft, never spiny; external ears well developed; no cheek pouches; toes as in *Xerus*, but the claws short and curved; skull much as in *Xerus*, with very small postorbital processes; dentition as in *Xerus*.

Mr. Forsyth Major, in his paper on Squirrels, quoted above, placed the three South African squirrels, together with certain other African

and Asiatic species, in the genus *Xerus*, in consequence of their resemblance to the members of that genus in certain characters of the molars and skull.

If, however, it is necessary to separate these squirrels from the old genus *Sciurus*, it seems better, as proposed by Mr. Thomas, to form a quite new genus for them, as the old genus *Xerus* is a very compact group separated from *Sciurus* by very definite though perhaps somewhat superficial characters.

FUNISCIURUS CIPAPI, THE GREY-FOOTED SQUIRREL.

Sciurus cipapi, A. SMITH, App. Report Exped. Explor. S. Africa, p. 43 (1836); ID., Illustr. Zool. S. Afr. Mamm., pl. v. (1849); LAYARD, Cat. Mamm. S. Afr. Mus., p. 46 (1862); JENTINK, Notes Leyd. Mus., iv., p. 26 (1882); LORENTZ, Ann. k.k. Hofmus. Wien, ix. notiz., p. 65 (1894) [Limpopo River Banks]; DE WINTON, Ann. Mag. N. H. (6), xix., p. 573 (1897).

Description.—General colour speckled yellowish grey and black; fur short, soft, and close, most of the hairs on the back and sides, black at the base and also ringed subterminally with the same colour, below from the chin much paler, nearly white, and hairs not ringed; whiskers black; iris black; ears oval and moderate, measuring about .7 in. in length, covered with sparse hairs; limbs paler than the back with quite short curved claws; tail nearly as long as the head and body, bushy, and very dark, composed of long pale yellow hairs, each with a double ring of black; skull with the palate extending only as far as the level of the posterior molars; upper incisors orange-coloured, ungrooved, premolars 2/1, the anterior upper ones small, molars somewhat resembling those of *Xerus capensis*.

Dimensions (from the skin of a female).—Head and body 8.50; tail 6.50 without, 7.75 with terminal hairs; hind foot 1.72; from ear to nose 1.53; skull length about 1.70, breadth 1.0; upper cheek teeth .28.

Distribution.—This species was first obtained by Sir Andrew Smith on the banks of the Limpopo River, in what is now the Rustenberg district of the Transvaal; it is also recorded from Damaraland and the Zambesi River; north of this it has been obtained from Nyassaland, but the squirrels from East Africa usually identified with this species have recently been shown by de Winton to be referable to other species.

Type of the species now in the British Museum.

FUNISCIURUS PALLIATUS, THE RED-HEADED SQUIRREL.

Sciurus palliatus, PETERS, M. B. Akad. Berlin, p. 273 (1852); *Ib.*, Reise Mozamb. Säugeth., p. 134, pl. xxxi., fig. 1, pl. xxxii., fig. 3 (1852); JENTINK, Notes Leyd. Mus., iv., p. 16 (1882).

Sciurus ornatus, GRAY, Proc. Zool. Soc., p. 13, pl. i. (1864) [Natal].

Description.—General colour above and on the outsides of the limbs speckled yellow and black, the hairs black at the base and subterminally with intermediate reddish-yellow bands and paler yellow tips; head speckled rufous and black; below throughout, including the cheeks, chin, inside and lower halves of the limbs bright rufous, the hairs being the same colour throughout; tail dark rufous with long hairs which are very pale at the base with two black rings following, the terminal half alone being dark rufous; whiskers black; eyes dark brown; ears in the only specimen examined nearly bare of hairs, though said in the original description to be thickly covered.

Incisors smooth and dark orange; premolars 2/1, the anterior upper one small and deciduous.

Dimensions (from a skin).—Head and body 8·25; tail without terminal hairs 4·50, with 6·50; hind foot 1·80; from ear to nose 1·75; skull length (about) 1·90, breadth 1·20; upper cheek teeth 40.

Distribution.—East and South Africa from Gallaland through German East Africa, Nyassaland and Mozambique to Zululand and perhaps Natal; the South African Museum possesses a skin from the Umgoye Forest in Zululand.

The type described by Peters from Mozambique is now in the Berlin Museum.

FUNISCIURUS CONGICUS, THE WESTERN STRIPED SQUIRREL.

Sciurus congicus, KÜHL, Beitr. Zool., p. 66 (1820); JENTINK, Notes Leyd. Mus., iv., p. 33 (1882) (in part); THOMAS, Proc. Zool. Soc., p. 265 (1882) [Cunene River].

Description.—General colour above yellowish brown, brighter on the shoulders, below very pale yellow; hairs of the back black at the base and many of them with black tips; along the sides from the shoulder to the hind limbs runs a narrow pale yellow stripe, below which is a similar dark one; an incomplete white ring round the eye; ears moderate, whiskers black; limbs pale, toes covered with long hairs nearly concealing the claws, tail a little shorter than the head and body, bushy, composed of long hairs which are bright yellow with a subterminal pale yellow band.

Anterior upper premolars present; incisors orange-coloured and not grooved.

Dimensions (from a skin).—Head and body 7·75; tail without terminal hairs 5·75, with 6·25; hind foot 1·5; from ear-opening to nose 1·4; skull length 1·42, breadth ·90; upper cheek teeth ·30.

Distribution.—West and South-West Africa from the Congo through Angola to Ovampoland; there is an example obtained by Mr. Eriksson from Ombanga in Ovampoland in the South African Museum.

FAMILY GLIRIDÆ.

GEN. GRAPHIURUS.

Graphiurus, F. CUVIER et GEOFFROY, Hist. Nat. Mam., livr. 60 (1829). Type *G. ocularis*.

Tail very bushy and somewhat distichous.

Dentition.—i. 1/1, c. 0/0, p.m. 1/1, m. 3/3=20; incisors not grooved; molars rooted, exceedingly small, especially the premolar, which is about half the width of the other teeth; the crowns of the molars are hollowed out, the rims being formed of a ridge of enamel; scarcely any traces of infoldings can be distinguished.

This genus is confined to the Ethiopian region; the smaller species were formerly placed in the genus *Eliomys*, of which the Garden Dormouse of Europe (*E. melanurus*) is the type, but they are now considered to be more appropriately assigned to the present genus originally formed for the reception of the large Grey Dormouse of South Africa.

In addition to the species below described some half-dozen have been recorded from other parts of Africa.

GRAPHIURUS OCULARIS, THE LARGE GREY DORMOUSE.

Sciurus ocularis, A. SMITH, Zool. Journ., iv., p. 439 (May, 1829).

Graphiurus capensis, F. CUVIER et GEOFFROY, Hist. Nat. Mam., livr. 60 (September, 1829); SMUTS, Enum. Mam. Cap., p. 32 (1832); A. SMITH, Illustr. Zool. S. Afr. Mam., pl. xxxix. (1849); LAYARD, Cat. Mam. S. Afr. Mus., p. 49 (1862); REUVENS, Myoxidæ, p. 50, pl. i., fig. 13, pl. iii., fig. 14 (1890); LORENTZ, Ann. k.k. Hofmus. Wien, ix. notiz, p. 65 (1894) [Marico Dist., Z.A.R.].

Myoxus cattoirii, FISCHER, Synop. Mamm., p. 310 (1829).

Graphiurus typicus, A. SMITH, S. Afr. Quart. Journ., ii., p. 145 (1834).

Graphiurus elegans, OGILBY, Proc. Zool. Soc., p. 5 (1838) [Damaraland].

Graphiurus ocularis, DE WINTON, Ann. Mag. N. H. (7), ii., p. 3 (1898).

Description.—General colour ashy grey, fur soft and thick, dark slaty at the base, dull white mixed with black at the apex; patch on the snout and chin, white with a reddish tinge; cheeks, a patch in front of the shoulder, and a spot on the head at the base of the inner angle of the ear conch, white, a black patch runs from the root of the whiskers through the eye and is continued along the front of the ear; ears large, rounded, nearly naked but thinly covered round the margin with fine black hairs; under surface from the chest downwards and the sides between the limbs dull white, the slaty bases of the fur showing clearly; extremities very slender, tail rather short, bushy throughout and distichous, white mixed with black above, black below, the individual hairs above being black for their basal and white for their terminal halves.

Dimensions (from a stuffed specimen).—Head and body 6·30; tail 3·85; with terminal hairs 4·90; from ear-opening to tip of snout 1·14; hind foot ·83; skull length 1·34, breadth ·78; upper cheek teeth ·14.

Distribution.—This large dormouse seems to be confined to South Africa, where it is widely distributed in suitable localities; the South African Museum possesses examples from Clanwilliam, Ceres, and Worcester in the west, and from Colesberg, Albany, and Uniondale in the east of the Colony; it is further recorded from Damaraland and the Marico district of the Transvaal.

The type described by Smith from Plettenbergs Bay (Knysna district of the Colony) is now in the British Museum.

GRAPHIURUS MURINUS, THE CAPE DORMOUSE.

Myoxus murinus, DESMAREST, Mamm. Suppl., p. 542 (1820); SMUTS, Enum. Mamm. Cap., p. 34 (1832); A. SMITH, S. Afr. Quart. Journ., ii., p. 146 (1834); PETERS, Reise Mozamb. Säugeth., p. 136, pl. xxxv., fig. 1 (1852); LAYARD, Cat. Mamm. S. Afr. Mus., p. 48 (1862).

Myoxus coupei, F. CUVIER, Hist. Nat. Mamm., livr. xxxvii. (1822) [Senegal].

Myoxus lalandianus, SCHINZ, Thierreich, iv., p. 393 (1825).

Myoxus erythrobronchus, A. SMITH, Zool. Journ., iv., p. 438 (1829).

Myoxus cinerascens, RUPPELL, Mus. Senck., iii., p. 136 (1842) [Natal].

Graphiurus murinus, ALSTON, Proc. Zool. Soc., p. 317 (1875) [rufous var.].

Eliomys murinus, REUVENS, Myoxidæ, p. 40, pl. i., figs. 4, 6, 7, pl. ii., fig. 9, pl. iii., figs. 5, 6, 7 (1890).

Eliomys microtis, NOAK, Zool. Jahrb., ii., p. 248 (1887).

Description.—General colour above mouse-grey, the hair very soft and thick, dark slaty at the base with ashy brown tips; below, including the cheeks, chin, and insides of the limbs, dull white, these hairs too being slaty at the base; in some adult specimens the chin, cheeks, and breast have a distinct rusty red tinge; feet very slender, covered with sparse pale hairs and furnished below with the usual pads, five to the fore and six to the hind limbs; from the root of the whiskers to the eyes, and round these, a dark ring, not always well marked, extends; the ears fairly large, rounded, and nearly naked; tail almost as long as the head and body, bushy, covered with long hairs which become much longer towards the apex, but the hairs are fairly evenly distributed, so that the tail can hardly be called distichous, its colour is the same as that of the back, the hairs being unicolorous throughout; four pairs of mammæ, one pair axillary, one pectoral, two inguinal.

Varieties having a general rufous tinge sometimes occur.

Dimensions (from a skin).—Head and body 4·1; tail without terminal hairs 2·77, with 3·55; hind foot ·65; from ear-opening to nose ·95; skull length 1·10, breadth ·63; upper cheek teeth ·15.

Distribution.—Western and Central Africa from Senegal and Kilimanjaro southwards to Cape Colony; in South Africa the Dormouse is found in the more wooded districts, especially in the east. The South African Museum possesses examples from the Beaufort West, George, Port Elizabeth, and Kimberley districts, from Pondoland, Natal, and Zululand.

The type obtained by Delalande in Cape Colony and described by Desmarest is now in the Paris Museum.

GRAPHIURUS PLATYOPS, DARLING'S DORMOUSE.

Graphiurus platyops, THOMAS, Ann. Mag. N. H. (6), xix., p. 388 (1897).

Description.—In external appearance closely resembling *G. murinus*, but a little larger, and with the tail distinctly white tipped.

Skull very different from *G. murinus*, being broad and flat, with long nasals, narrow interorbital region, and broad and depressed

brain case; the molars are rather smaller than those of the other species.

This form appears to be doubtfully distinct from *G. murinus*.

Dimensions (of the type Thomas).—Head and body 4·20; tail 2·75; hind foot ·90; skull length 1·05, breadth ·68; upper cheek teeth ·12.

Distribution.—The type and only specimen known was obtained at Enkeldorn, in Mashonaland, by Mr. J. ffolliott-Darling, and is now in the British Museum.

GRAPHIURUS NANUS, THE DWARF DORMOUSE.

Myoxus (*Eliomys*) *nanus*, DE WINTON, Proc. Zool. Soc., p. 799 (1896).

Description.—Smaller than *G. murinus*, general colour rather more ashy, the wood-brown tinge being much less evident, below dull white; a black patch on the face extending from the whisker roots to round the eyes; tail club-shaped, very slender at the base and bushy at the apex, of the same colour as the body above, below somewhat paler; tip of the tail distinctly white.

Skull like that of *G. murinus*, but smaller.

Dimensions (of a specimen measured in the flesh by Mr. Marshall, now in the South African Museum).—Head and body 3·30 (of dried skin 3·52); tail without hairs 2·55, with 3·12; hind foot ·60; from ear-opening to tip of nose ·85; skull length ·80, breadth ·51; upper cheek teeth ·12.

Distribution.—This species was recently described by Mr. de Winton from a single specimen obtained at Mazoe, in Mashonaland, by Mr. J. ffolliott-Darling, now in the British Museum. The South African Museum has recently received a male and two young ones from Salisbury, presented by Mr. G. A. K. Marshall.

GRAPHIURUS KELLENI, THE DAMARALAND DORMOUSE.

Eliomys kelleni, REUVENS, Myoxidae, p. 35, pl. i., fig. 1, pl. iii., fig. 3 (1890).

Description.—Closely resembling *G. nanus* in size and coloration, but the tips of the hairs on the body above have pale rings with dark brown tips. It is doubtfully distinct from its ally.

Dimensions (of the type Reuvsen).—Head and body 2·50; tail with hairs 3·38, without 2·62; hind foot ·62; skull length ·70, breadth ·48; upper cheek teeth ·12.

Distribution.—This species is described from a single specimen

preserved in alcohol in the Leyden Museum, obtained in Damaraland by M. Kellen, and is not represented in the South African Museum collections.

FAMILY MURIDAE.

SUB-FAMILY GERBILLINAE.

GEN. GERBILLUS.

Gerbillus, DESMAREST, N. Dict. d'Hist. Nat. (1), xxiv., tabl., p. 22 (1804). Type *G. aegyptius*.

Rat-like animals with somewhat pointed muzzles and moderate-sized ears, sparsely covered with hairs: tail long, hairy, and usually slightly tufted; hind feet elongated, with four rounded tarsal pads; skull with large and swollen bullae; upper incisors grooved (in all South African species); molars at first tubercular, but after wear consisting of a series of transverse or elliptical laminae; the anterior tooth in each jaw consisting of three, the middle of two, the posterior of one only.

This genus is a very large one, and spread over the greater part of the Old World, and has been studied in considerable detail by Lataste; the South African species, however, are in a good deal of confusion, which cannot well be rectified until a re-examination of the old types and a comparison of them with freshly collected material has taken place.

A recent paper by Mr. de Winton has thrown some light on the subject; he recognises four species as existing in South Africa: of these, three are closely allied and difficult to distinguish; the fourth, *G. paeba*, is considerably smaller and of a rather different colour.

GERBILLUS PAEBA, THE RED GERBILLE.

Gerbillus paeba, A. SMITH, App. Report Exped. Explor. S. Afr., p. 43 (1836); DE WINTON, Ann. Mag. N. H. (7), ii., p. 3 (1898).

Gerbillus tenuis, A. SMITH, Illustr. Zool. S. Afr. Mamm., pl. xxxvi., fig. 2 (1849); THOMAS, Proc. Zool. Soc., p. 265 (1882) [Damaraland].

? *Gerbillus tenuis*, var. *schinzi*, NOAK, Zool. Jahrb., iv., p. 134, pl. iii., figs. 13-16 (1889).

? *Meriones (Rhombomys) caffer*, WAGNER, Arch. f. Naturg., i., p. 18 (1842); id., SCHREBER, Säugeth. Suppl., iii., p. 482 (1843).

Description.—General colour above pale reddish orange, rather darker along the back owing to brown pencilling; bases of the fur

dull lavender-purple; below and insides of the limbs pure white; ears moderately long and oval; tail slender, cylindrical, and tapering, clothed with short, stiff hairs of the same colour as the back, ending in a thin umber-brown tuft.

Upper incisors pale Dutch-orange with a median longitudinal furrow, lower incisors pale straw-yellow, slender and long (Smith).

Dimensions.—Head and body 4·0; tail 4·50; length of upper molars ·2.

Distribution.—The types procured by Sir A. Smith were found north of Latakoo, in what is now Bechuanaland, and are in the British Museum. Thomas and Noak have identified Gerbilles from Damaraland and the Kalahari with this species, and de Winton mentions Namaqualand and the Transvaal as localities. There are no examples in the South African Museum.

GERBILLUS AFER, THE CAPE GERBILLE.

Gerbillus afer, GRAY, Spicileg. Zool., p. 10 (1828); A. SMITH, S. Afr. Quart. Journ., ii., p. 159 (1834); F. CUVIER, Trans. Zool. Soc., ii., p. 143, pl. xxvi., figs. 5, 9 (1836); A. SMITH, Illustr. Zool. S. Afr. Mamm., pl. xxxv. (1849); LAYARD, Cat. Mamm. S. Afr. Mus., p. 51 (1862); DE WINTON, Proc. Zool. Soc., p. 800 (1896) [Rhodesia]; ID., Ann. Mag. N.H. (7), i., p. 4 (1898).

Meriones schlegelii, SMUTS, Enum. Mam. Cap., p. 41, pl. i., pl. iii., figs. 1, 5 (1832) [Port Elizabeth].

Description.—General colour fawn brown, darker owing to the intermixture of black hairs on the back, lighter on the sides; fur soft and thick, pale slaty at the base, the tips lightish brown; below from the chin backwards pure white, the fur being the same colour throughout; head rather pointed, ears oval and large, sparsely covered with fine brown hairs; front limbs short, brown outside, white inside and on the hands, with four pale yellow or white claws and five prominent carpal pads; hind limbs long, the tarsus and toes especially so, the latter covered with white hairs, the three middle toes much the longest and the first the shortest, all with long, pale claws; there are four tarsal pads, the one at the base of the first digit being smaller than the others; tail about as long as the head and body, fairly thickly covered with stiff hairs, brown above, pale below.

Upper incisors yellow, with a prominent, well-marked groove running along slightly nearer the outer than the inner edge of the tooth; lower incisors the same colour and ungrooved.

Dimensions (of a specimen in alcohol).—Head and body 5·0; tail

5.50; from ear-opening to tip of snout 1.45; hind foot 1.50, with middle claw 1.63. An example from Mashonaland measured in the flesh by Mr. Darling is given by de Winton as follows: Head and body 5.93; tail 6.30; hind foot 1.25; skull length 1.45, breadth about .86; length of upper molars .27.

Varieties and Synonymy.—The above description is drawn up from examples both stuffed and preserved in alcohol from the immediate neighbourhood of Cape Town.

Another Gerbille from Mazoe, presented by Mr. Darling, apparently identical with specimens from the same place and donor, described by Mr. de Winton (v.s.) differs from these in several particulars, of which the following are the most important:—

The hind foot is shorter, being 1.15 in. in length as against 1.50 in the Cape Colony specimens, the difference is not so much in the tarsus itself as in the length of the three middle toes.

The tail of the Mashonaland example has the scales faintly spotted with brown, there are no traces of these spots in the Colony specimens; further, the tail is much darker above and ends in a slight black tuft, whereas the tail of the Colony species is not darker at the tip.

In the Mazoe animal the claws of both fore and hind limbs are shorter and very dark, almost black in colour, and finally the general colour of the animal is very much darker than in the Cape examples.

Another skin in the South African Museum, in a very bad state of preservation, from Kimberley, is, although of the same size as the typical *G. afer*, of a very different colour it is of a bright reddish orange and accords very well, as far as the colour is concerned, with *G. paeba* but it is much larger than that species as described by Smith.

Distribution.—The Cape Gerbille is not uncommon in the neighbourhood of Cape Town and is recorded by Smuts from Port Elizabeth; it is probably found all over the Colony, and, if Mr. de Winton's identification is correct, extends northwards to Mashonaland.

GERBILLUS BRANTSII, BRANTS' GERBILLE.

Gerbillus brantsii, A. SMITH, Report Exped. Explor. S. Afr., p. 43 (1836); DE WINTON, Ann. Mag. N. H., (7), i., p. 4 (1898).

Gerbillus montanus, A. SMITH, Illustr. Zool. S. Afr. Mamm., pl. xxxvi., fig. 1 (1849).

Meriones (Rhombomys) maccalinus, SUNDEVALL, Oefvers. Akad. Forh. Stockholm (1846), p. 120 (1847).

Description.—General colour above light rufous-brown, freely pencilled with darker brown, paler on the sides, below dull white; head short and somewhat bulky posteriorly; nose-tip black-brown; ears oval, thinly covered with hairs; tarsi ashy brown grey; toes shorter than in *G. afer*; tail reddish brown above, with blackish hairs intermixed, a little shorter than the head and body.

Incisors above Dutch-orange, below white, much larger than in *G. afer*, and distance between them and the molars less (Smith).

Dimensions.—Head and body 6·0; tail 5·0 (Smith).

Distribution.—Sir A. Smith's specimens were obtained near the sources of the Orange and Caledon Rivers in what is now Basutoland; the type of *M. maccalinus*, was collected by Wahlberg in the Maccali (= Magaliesberg) Mountains in the Rustenberg district of the Transvaal. It is also recorded from the Transvaal by Mr. de Winton. There are no examples in the South African Museum.

GERBILLUS LOBENGULAE, LOBENGULA'S GERBILLE.

Gerbillus leucogaster, apud DE WINTON, Proc. Zool. Soc., p. 806 (1896) (nec Peters).

Gerbillus lobengulae, DE WINTON, Ann. Mag. N. H. (7), i., p. 4 (1898).

Description.—General colour above pale fawn, finely grizzled with dull black along the back, pure along the sides; below pure white, the two colours abruptly separated; in other external characters resembling *G. afer*.

Skull with a narrow facial portion across the nasals and maxillae between the infraorbital foramina.

First upper molar persistently cuspidate, the second lobe being divided into a pair of cusps outer and inner in fairly adult specimens (de Winton).

Dimensions.—Head and body 5·30; tail 6·30; hind foot 1·33 (de Winton).

Distribution.—This form was obtained by Mr. F. C. Selous, at Essex Vale, near Bulawayo, and was first identified by Mr. de Winton with *G. leucogaster* of Peters, and subsequently considered to be a distinct species; the type and only other known examples are in the British Museum.

GEN. PACHYUROMYS.

Pachyuromys, LATASTE, Le Naturaliste, i., p. 314 (1880). Type *P. duprasi*.

This genus contains animals allied to the Gerbilles, distinguished by their short tails and their peculiarly shaped skulls in which the tympanic bulla is enormously swollen and enlarged so that it projects back behind the level of the occipital condyles and can be seen at the two posterior angles of the skull when viewed from above. The antorbital plate is not nearly so well developed as in Gerbilles.

The incisors are very slender and pale and marked with an inconspicuous furrow; the molars are much reduced in size as compared with those of *Gerbillus*.

Only two species are recognised in this genus—the South African one, below described, and *P. duprasi*, from North Africa.

PACHYUROMYS AURICULARIS, THE NAMAQUALAND GERBILLE.

Gerbillus auricularis, A. SMITH, S. Afr. Quart. Journ., ii., p. 160 (1834); ID., Illustr. Zool. S. Afr. Mamm., pl. xxvi. (1849); DE WINTON, Ann. Mag. N. H. (7), i., p. 5 (1898).

Gerbillus brevicaudatus, F. CUVIER, Trans. Zool. Soc., ii., p. 144, pl. xxvi., figs. 10, 13 [Skull] (1836).

Pachyuromys auricularis, HUET, Le Naturaliste, i., p. 339 (1881); THOMAS, Proc. Zool. Soc., p. 265 (1882) [Damaraland].

Description.—Form short and thick; general colour above tawny brown, mottled and pencilled with dull black, the sides somewhat lighter; fur slaty at the base, ochraceous yellow in the middle, and dark brown at the tips; sides of the muzzle, eyebrows, sides of the head, beneath from the chin backwards, and fore legs pure white; tarsus covered below with white hairs and provided with a single large somewhat complicated pad occupying the space between the toes; toes short, claws small and pale yellow in colour; behind the ear at the base a conspicuous white spot; ears small, oval, and flesh-coloured, a few white hairs on the inner surface; tail short and thick, covered with short, stiff hairs, above brown, beneath reddish white.

Incisors pale yellow, the upper ones grooved rather faintly.

Dimensions (from a specimen in alcohol).—Head and body 4·0; tail 3·12; hind foot ·86; from ear to nose-tip 1·12; skull, length 1·27, breadth ·80; upper cheek teeth ·18.

Distribution.—The original specimen, described by Smith, came from the Kamiesberg in Namaqualand; it is also recorded from Otjimbique, in Damaraland, and the neighbourhood of Kimberley; the South African Museum has recently received specimens from near Douglas just north of the Orange River in Griqualand West.

SUB-FAMILY OTOMYINAE.

GEN. OTOMYS.

Otomys, F. CUVIER, Dents des Mamm., p. 168 (1825). Type *O. irroratus*.

Euryotis, BRANTS, Het Geslacht der Muizen, p. 93 (1827). Type *O. irroratus*.

Rat-like animals with short tails, clad with bristles and scales; hind feet short and ears usually large; skull with a moderate bulla and an arched nasal profile, upper incisors grooved, molars composed of a series of laminae of enamel united by cement, posterior molar of upper and anterior molar of lower jaw the largest, the former consisting of from four to nine lamellae.

The genus is a purely African one; in addition to the South African forms below described only one other species, *O. jacksoni*, from British East Africa, is known.

OTOMYS IRRORATUS, THE VLEY OTOMYS.

Euryotis irrorata, BRANTS, Het Geslacht der Muizen, p. 94 (1827); A. SMITH, Illustr. Zool. S. Afr. Mamm., pl. xxii. (1849); GRILL, Victorin Zool. Anteck. K. Vet. Akad. Handl. Stockholm, ii., p. 17 (1858); LAYARD, Cat. Mamm. S. Afr. Mus., p. 53 (1862).

Otomys bisulcatus, F. CUVIER, Hist. Nat. Mamm., livr. 61 (1829).

Otomys irroratus, SMUTS, Enum. Mamm. Cap., p. 45 (1832); DE WINTON, Proc. Zool. Soc., p. 801 (1896) [Mashonaland]; Id., Ann. Mag. N. H. (7), i., p. 5 (1898).

Euryotis typicus, A. SMITH, S. Afr. Quart. Journ., ii., p. 149 (1834).

Euryotis obscura, LICHTENSTEIN, Verzeichs. Säugeth. u. Vögeln Kaffirland, p. 10 (1842).

Description.—General colour above and on the sides dark speckled brown, the bases of the fur rather pale slaty, the tips mingled pale brown and black in varying proportions so that there are darker and lighter individuals, below dirty white, the bases of the fur still slaty, and the tips whitish; ears large, rounded, about $\frac{3}{4}$ inch in length and breadth, anteriorly fairly well covered with hair; fore limbs short and slender with five carpal pads, and a rudimentary first digit; hind foot short with six tarsal pads, of which the proximal one is somewhat elongated as in the true rats; tail less than half the length of the head and body, covered with short stiff bristles hardly showing any tendency to form a tuft at the tip, black above, dirty-white below. Nasal bones of the skull very much expanded in front.

Incisors much curved, very stout, about .2 in. across the tips, chrome-yellow, each with a deep, well-marked groove running its length about one-third of the breadth of the whole tooth from the outside edge; lower incisors also stout and chrome-yellow, strongly grooved nearer the outer edge than those of the upper jaw; the molars consist of a series of parallel laminae of enamel, the number of which to each tooth can be best expressed in the following formula beginning with the anterior tooth: $\frac{3-2-6 \text{ to } 9}{4 \text{ to } 6-2-2}$.

Dimensions (of a skin).—Head and body 8.0; tail 3.25; hind foot 1.1; from ear-opening to tip of nose 1.55. Of a specimen measured in the flesh by Darling (*cf.* de Winton); head and body 7.75; tail 4.60; hind foot 1.12; skull, length 1.60, breath .85; upper cheek teeth 40.

Variation.—The *Otomys* varies a good deal in colour throughout its range, and Mr. Thomas has shown that the specimens from East Africa (Mianzini) and Nyassaland differ from those of the Cape Colony in possessing an extra lamella to the posterior upper and anterior lower molar, making the numbers 7 and 5, instead of 6 and 4, as in the typical variety; in two skulls from Entafufu, in Pondoland, preserved in the South African Museum the lamella formulae are $\frac{3-2-7}{4-2-2}$ and $\frac{3-2-9}{6-2-2}$. The skins belonging to these two skulls do not seem to differ in any very marked respect from the typical variety, and they were both collected in the same locality about the same time, so that until other evidence is forthcoming we may conclude that variation in the number of molar lamellae is not of specific importance.

Distribution.—The Vley *Otomys* is found over a considerable portion of Africa from Somaliland southwards through British East Africa, German East Africa, Nyassaland, and Angola to South Africa.

The first collector of this species was M. Delalande, whose specimens were described by M. Cuvier under the name of the "*Otomie Namaquois*," believing that they came from Namaqualand. The South African Museum possesses examples from the neighbourhood of Cape Town, Bedford, Knysna and Pondoland, and from Potchefstroom in the Transvaal, and it is also recorded from Mashonaland by Mr. de Winton.

OTOMYS UNISULCATUS, THE BUSH OTOMYS.

Otomys unisulcatus, F. CUVIER, Hist. Nat. Mam., livr. 60 (1829); SMUTS, Enum. Mam. Cap., p. 46 (1832); DE WINTON, Ann. Mag. N. H. (7), i., p. 5 (1898)

Euryotis unisulcatus, A. SMITH, S. Afr. Quart. Journ., ii., p. 149 (1834); *Id.*, Illustr. Zool. S. Afr. Mam., pl. xxiii. (1849).

Euryotis pallida, WAGNER, Archiv. Naturg., i., p. 134 (1841).

Otomys rufifrons, WAGNER, Schreber Säugeth. Suppl., iii., p. 507 (1843).

Description.—General colour dark grey-brown, paler on the sides and becoming a dirty white below, rather lighter in colour than *O. bisulcatus*; the fur is soft, dark slate at the base, and pale yellow and black at the tips; ears very large and rounded, measuring about .9 in., thickly covered with hair; limbs and toe-pads much as in *O. bisulcatus*; tail less than half the length of the head and body covered with short bristles, dark above, light below.

Skull with the superior and anterior edges of the perpendicular plate of the antorbital foramina forming almost a right angle.

Upper incisors narrower than in the last species (about .15 in. broad at their tips), paler, and with the groove much nearer the outer edge; lower incisors ungrooved; formula of the molar laminae $\frac{3-2-1}{4-3-2}$

Dimensions (from a stuffed specimen).—Head and body 8.25; tail 3.50; hind foot 1.08; from ear-opening to tip of snout 1.55; skull length 1.40, breadth .70; upper cheek teeth .34.

Distribution.—To M. Delalande's collecting and M. Cuvier's description we are also indebted for our first knowledge of this species, and except for Sir A. Smith the animal seems to have attracted little attention since; the South African Museum possesses examples from Garies in Namaqualand, Clanwilliam and Malmesbury, and from Touws River in the Worcester division, and Sir A. Smith records his specimens from George.

OTOMYS BRANTSII, BRANTS' OTOMYS.

Euryotis brantsii, A. SMITH, S. Afr. Quart. Journ., ii., p. 150 (1834); *Id.*, Illustr. Zool. S. Afr. Mam., pl. xxiv. (1849).

Otomys brantsii, DE WINTON, Ann. Mag. N. H. (7), i., p. 6 (1898).

Description.—General colour yellowish brown, lighter on the sides and below; as in the other species the fur is slaty at the base, with yellowish brown intermingled with less abundant black tips; ears markedly smaller than in the other two species, about half an inch in length and breadth, fairly thickly clothed with hairs; limbs somewhat stouter and broader than those of *O. unisulcatus*; tail thickly clothed with somewhat stout yellow bristles with a dark dorsal band more marked towards the tip, which is almost black; two pairs of mammae inguinal in position; tarsal pads six, all circular.

Nasal bones not expanded, normal; upper incisors moderate, the groove well to the outer side of the tooth, the outer edge pale, almost white; lower incisors sometimes faintly grooved, generally smooth; formula of molar laminae: $\frac{3-3-1}{4-2-2}$.

Dimensions (from an example in spirit).—Head and body 5·60 (of a skin 7·0); tail 3·40; hind foot 1·15; from ear-opening to tip of nose 1·60; skull length 1·50, breadth ·75; cheek teeth ·30.

Distribution.—Namaqualand, Sir Andrew Smith's specimen came from the neighbourhood of the Orange River; there are a considerable number of examples in the South African Museum obtained by Mr. Péringuey at Klipfontein, near O'okiep in Namaqualand.

SUB-FAMILY DENDROMYINAE.

GEN. DENDROMYS.

Dendromus, A. SMITH, Zool. Journ., iv., p. 438 (1829). Type *D. mesomelas*.

Small, slender, mouse-like animals with long, scaly, and sparsely-haired tails, rather large ears, and with slender limbs with the three middle digits of each elongated. Skull with the infraorbital opening triangular, hardly at all narrowed below.

Upper incisors grooved, molars small, the anterior upper one as long as the second and third taken together; the tubercles fairly distinctly arranged in pairs.

DENDROMYS MESOMELAS, THE CHESTNUT TREE MOUSE.

Mus mesomelas, BRANTS, Muizen, p. 122 (1827).

Dendromus typus, A. SMITH, Zool. Journ., iv., p. 439 (1829).

Dendromys mesomelas, SMUTS, Enum. Mam. Cap., p. 40 (1832).

Dendromys typicus, A. SMITH, S. Afr. Quart. Journ., ii., p. 158 (1834); *Id.*, Illustr. Zool. S. Afr. Mam., pl. xxxiv., fig. 1, pl. xxi., fig. 2 [skull and teeth] (1849).

Description.—General colour chestnut-brown above, paler on the sides, white with a rufous tinge below; fur soft and thick, dark slaty for the basal three-quarters, tips chestnut-brown; head and snout acutely pointed; ears large, thinly covered with hairs, which are thicker along the margin, so as to there give it a darker appearance; fore limbs short and slender, formed for grasping, the three middle fingers elongated and the fifth much shorter, all clawed except the first;

hind limbs elongated and slender, toes long, all clawed except the first, which has a flat nail; tail as long or longer than the head and body, slender, with rings formed of a series of scales, which are somewhat concealed by the numerous bristles, dark above, lighter below. A black dorsal stripe from behind the head to the root of the tail is sometimes present, but is not noticeable in the specimens on which the above descriptions are founded.

Dimensions (from a stuffed specimen).—Head and body 3·80; tail (somewhat contracted), 3·80; hind foot ·75; from ear-opening to tip of nose ·90.

Distribution.—East and South Africa, from Gallaland through Nyassaland to Cape Colony; the type is said to have come from the Sondags River in Uitenhage; the South African Museum possesses examples from the immediate neighbourhood of Cape Town.

DENDROMYS PUMILIO, THE SMALL TREE MOUSE.

Dendromys pumilio, WAGNER, Munch. Gelehrte. Anzeiger, xii., p. 437 (1841); MATCHIE, Säugeth. Deutsch Ost Afrika, p. 49 (1895).

Description.—Smaller than *D. mesomelas*, and without the black dorsal stripe; reddish brown above, cheeks, lower side and feet white; tail longer than the head and body (Matchie); is very doubtfully distinct from *D. mesomelas*.

Dimensions.—Head and body 2·38; tail 3·12 to 3·75.

Distribution.—East and South Africa; this tree mouse is recorded from various parts of German East Africa, and was originally described from Cape Colony. Unrepresented in the South African Museum collections.

DENDROMYS MELANOTIS, THE GREY TREE MOUSE.

Dendromys melanotis, A. SMITH, S. Afr. Quart. Journ., ii., p. 158 (1834); ID., Illustr. S. Afr. Zool. Mam., pl. xlix., fig. 2, (1849); FISK, Proc. Zool. Soc., p. 340 (1887) [habits].

Description.—General colour above ashy grey with a slight tinge of rufous, below dull white; a well-marked black line from between the shoulders to the root of the tail; fur soft and thick, slaty at the base as in the other species; ears broad and patulous, larger than in *D. mesomelas*, the tips dark, covered with sparse silvery white hairs, a white spot on the side of the head at the base of the outer margin of the conch; fore limbs slender, only the three middle toes clawed, the first and fifth mere rudiments; hind feet long and slender,

especially the toes, of which only the three middle ones bear claws, the fifth bears a flat nail, the first is represented only by a tubercle; the soles of the carpus and tarsus are without well-defined pads, but covered with a series of closely set hemispherical swellings; tail longer than the head and body, covered with rings from which spring short bristles, dark above, light below; eight mammae, one pair axillary, one pair pectoral, and two pairs inguinal.

Dimensions (from a stuffed specimen).—Head and body 2·80; tail 3·0; hind foot ·60; from ear-opening to tip of nose ·65; skull, length ·80, breadth ·40; upper cheek teeth ·15.

Distribution.—Sir A. Smith's type came from Durban; the South African Museum possesses examples from the suburbs of Cape Town; no other locality seems to be recorded, unless certain examples mentioned by M. Bocage from Angola are referable to this species.

GEN. STEATOMYS.

Steatomys, PETERS, Bericht Akad. Berlin, p. 258 (1846). Type *S. pratensis*.

Small, short-tailed, mouse-like animals, always very plump owing to the storage of fat all over the body, with no cheek pouches, moderate ears, and short limbs.

Skull with the infraorbital opening not narrowed below.

Upper incisors grooved; molars tuberculated, the tubercles arranged in two rows, except in the case of the anterior upper molar, whose median row consists of three, so that this tooth has seven tubercles instead of eight, as in *Mus*.

This genus is also purely Ethiopian. Three other species have been recently described from West and East Africa.

STEATOMYS PRATENSIS, THE FAT MOUSE.

Steatomys pratensis, PETERS, Bericht Akad. Berlin, p. 258 (1846); THOMAS, Ann. Mag. N. H. (6), x., p. 265 (1892); DE WINTON, Proc. Zool. Soc., p. 805 (1896) [Mashonaland].

Steatomys edulis, PETERS, Reise Mozamb. Säugeth, p. 163, pl. xxxiv., fig. 2, pl. xxxv., fig. 11 (1852).

Steatomys krebsii, PETERS, *ibid.*, p. 165, pl. xxxvi., fig. 3 (1852) [Kaffraria].

Description.—Form stout and plump; general colour dark rufous above, lighter on the sides, white below; fur very short and soft; snout short and pointed; ears moderate, fairly well clothed with

hairs; limbs white, fore feet with four claws and a flat nail to the first finger; hind foot with five claws, shorter than those of the fore limb; tail short, hardly half the length of the body, brown above, white below (Peters).

Dimensions (from Peters' description).—Head and body 3·25; tail 1·75; hind foot ·60; skull length ·79, breadth ·47; upper cheek teeth ·13. From a specimen from Mashonaland, measured in the flesh by Mr. Darling; head and body 3·77; tail 1·77; hind foot ·66.

Distribution.—South-East Africa: Mozambique (whence came the type), Mashonaland, Nyassaland, and “the interior of Kaffraria” (probably meaning the Transvaal), whence came the type of *S. krebsi*; the species is not represented in the South African Museum.

GEN. MALACOTHRIX.

Otomys, A. SMITH, S. Afr. Quart. Journ., ii., p. 147 (1834) (nec Cuvier). Type *M. typicus*.

Malacothrix, WAGNER, Schreb. Säugeth. Suppl., iii., p. 496 (1843). Type *M. typicus*.

Small, short-tailed, mouse-like animals with stout bodies, slender limbs, and well-developed ears; the tarsus and carpus are hairy to the toe pads; the skull is slender, the antorbital foramen is hardly at all narrowed below, and the perpendicular plate is not well developed.

The upper incisors are very strongly grooved towards their outer edge, the lower ones ungrooved and rather paler; the molars resemble those of *Steatomys*, the anterior upper one with 7 cusps, 2 in the anterior and posterior row, and 3 in the median row, the middle molar has 5, the front row 3, of which the innermost is small and not well developed, the back row 2, the posterior molar has 2 small cusps only, side by side; in the lower molars the cusps are arranged in pairs.

This genus seems to come close to *Steatomys*, being distinguishable only by its very hairy tarsus.

Only the two species below described are included in it, as *Otomys albicaudatus* of Smith must apparently be assigned to the Sygmodont genus *Mystromys*.

MALACOTHRIX TYPICUS, THE MOUSE GERBILLE.

Otomys typicus, A. SMITH, S. Afr. Quart. Journ., ii., p. 148 (1834); LAYARD, Cat. Mam. S. Afr. Mus., p. 54 (1862).

Malacothrix typicus, WAGNER, Schreb. Säugeth., Suppl. iii., p. 498 (1843); DE WINTON, Ann. Mag. N. H. (7), i., p. 8 (1898).

Description.—General colour pale brown above, the fur long, soft, and with dark slaty bases, below white also with slaty bases; head somewhat pointed, ears very large for the size of the animal, measuring about .7 in. by .55 in., dark coloured, sparsely covered with fine black and white hairs intermixed; limbs slender, covered with dull white hairs; on the fore foot four toes clawed, the third and fourth only slightly exceeding the second and fifth in length; hind foot with four toes only, the first or inner one being absent, all clawed, the fifth slightly shorter than the others; whole under surface of the carpus and tarsus right up to the toe pads covered with short, white, coarse hairs; tail short, dark, and scaly, covered with short, white, bristly hairs, and so appearing a dirty white.

Skull slender and much narrowed between the orbits, incisors orange, and the upper ones deeply grooved.

Dimensions (from a stuffed specimen).—Head and body 3.5; tail 1.40; hind foot .70; from ear-opening to tip of snout 1.0; skull length .90, breadth .55; length of cheek teeth .19.

Distribution.—Apparently confined to Cape Colony; the species was described by Sir A. Smith many years ago from specimens obtained near Graaf Reinet; the above description is drawn up from specimens in the South African Museum from Beaufort West and Griqualand West.

MALACOTHRIX PENTONYX, sp. nov., THE SMALL-EARED MOUSE GERBILLE.

Description.—General colour above brown with a rufous tinge, below including the upper lips and limbs pure white, the line of demarcation being very marked; fur soft and thick, above with, below without, slaty bases; head acutely pointed, ears moderate, markedly smaller than those of *M. typicus*, oval, about .45 by .30, covered internally with sparse whitish, externally with brown hairs.

Limbs slender, proportioned much as in *M. typicus*, the fore-limbs with four clawed toes; hind limbs with five toes, all with well-marked claws, of which the inner (*i.e.*, the first) is the shortest, and the fifth slightly shorter than the other three; tarsus hairy as in the other species.

Tail short, a little darker above than below, covered with short, stiff, bristle hairs.

Skull with the interorbital region somewhat wider than in *M. typicus*; teeth as in the other species.*

Distribution.—Western part of the Colony; the types were obtained on the Cape Flats near Cape Town, by Messrs. E. L. Layard and M. Bishop.

SUB-FAMILY MURINAE.

GEN. MUS.

Mus, LINNAEUS, Syst. Nat., 12th ed., i., p. 79 (1766).

Animals with bodies covered with soft, sometimes spiny, fur, with pointed muzzles, no cheek pouches and prominent eyes; the ears are nearly naked, the tail more than half the length of the body, covered with scales arranged in rings, with usually a sparse covering of short bristles; pollex rudimentary with a flat nail, all the other digits with claws; palms with five, soles with six rounded or oval pads.

Skull with the antorbital foramen usually forming a narrow slit below, and the perpendicular plate which forms its outer wall well developed; palate compressed and the incisive foramina long.

Dentition the same as in all *Muridae*, i.e., i. 1/1, c. 0/0, p.m. 0/0, m. 3/3 = 16. Incisors not grooved, usually rather narrow; molars when unworn with a triple longitudinal row of tubercles, lower jaw with a double row, when worn crossed by curved transverse bands of enamel, marking the position of the tubercles.

This genus is the largest of the whole Mammalian class, containing, according to Trouessart's list, 176 species, and doubtless many still remain to be described.

They range all over the Old World, with the exception of Madagascar, but are not found in the New except where introduced by human agency.

The study of the South African species has been much neglected since the time of Sir A. Smith, and it is very difficult to identify some of his species owing to the fact that his descriptions are often short and vague, and also that the types of those still in the British Museum are all in a very bad state of preservation.

MUS DECUMANUS, THE NORWAY OR BROWN RAT.

Mus decumanus, PALLAS, nov. sp. Glir., p. 91 (1778); SMUTS, Enum. Mamm. Cap., p. 35 (1832); LAYARD, Cat. Mamm. S. Afr. Mus., p. 51 (1862).

* For dimensions see p. 239.

Description.—General colour above greyish brown, sometimes with a reddish-brown tinge; fur woolly, intermixed with longer, coarser, straight hairs, the woolly portion slaty, with pale brown tips, the coarse hairs black; below dirty white with slaty bases to fur; ears small, when pressed forward not reaching the eyes; limbs and feet stout and strong; the tarsal pads well developed, six in number, the proximal one being an elongated oval; tail always shorter than the head and body, covered with short sparse bristles, not concealing the scaly rings, which are coarse, numbering about 25 to the inch, the bristles become a little longer towards the tail-tip, and form a slight tuft in some cases; mammae 5 to 6 pairs.

Skull large, with well-developed supraorbital ridges; the antorbital foramen is narrowed below, and the anterior edge of the plate is perpendicular.

This rat can always be distinguished by its size, the shortness of its ears and tail, and by its coarse fur.

Dimensions (from a large stuffed male).—Head and body 11·25; tail 7·75; hind foot 1·60; from ear-opening to nose-tip 2·20; skull length 1·50, breadth ·70; length of upper molars ·30.

Distribution.—This rat is cosmopolitan, being found all over the world, especially in the neighbourhood of towns and seaports; its original home appears to have been in Western China, whence it spread to Europe early in the last century—it is said to have reached England about 1730. It is common in Cape Town and neighbourhood, and is probably to be found in all the large towns, and along the lines of communication.

MUS RATTUS, THE BLACK RAT.

Mus rattus, LINNAEUS, Syst. Nat., 12th ed., i., p. 83 (1766); LAYARD, Cat. Mam. S. Afr. Mus., p. 51 (1862); DE WINTON, Proc. Zool. Soc., pp. 803, 807 (1896) [Rhodesia].

Description.—General colour above and below brown, fur coarse and harsh, ears larger than in *M. decumanus*, when pressed forward reaching as far as the eye; feet and hands a little paler than the back but not white, the pads on the soles well developed; the proximal one elongated and oval; tail much longer than the head and body, of the same brown colour throughout, covered with short bristles not becoming much longer towards the tip; tail rings somewhat finer than those of *M. decumanus*, about 30 to the inch; extreme tail-tip in South African specimens examined, white;

mammæ 10 to 12 in number, 2 or 3 pairs pectoral, 3 pairs inguinal.

Skull generally resembling that of *M. decumanus*, but rather shorter in the nasal region.

Dimensions (measured in the flesh).—Head and body 7·40; tail 8·63; hind foot 1·32; skull length 1·40, breadth ·75; upper molars ·30.

Distribution.—Like the brown rat, the black rat is cosmopolitan, having been carried all over the world in ships; it has, however, been driven out of many places by its brown cousin, and is now comparatively rare in England.

In Africa the black rat was formerly common in Cape Town, but it now seems to have disappeared; it is, however, the common house rat of Rhodesia, and I have examined a specimen from Pretoria preserved in the Museum there.

This rat is not indigenous in Europe, though long established there, it has been known to exist on the Continent since the thirteenth century; brown and rufous varieties differing somewhat in colour from the ordinary European form are found in North Africa, India, and Burma, and are there indigenous; it is probably from this form that the present European race originated.

MUS CHRYSOPHILUS, DARLING'S RAT.

Mus chrysophilus, DE WINTON, Proc. Zool. Soc., pp. 801, 807 (1896).

Description.—General colour bright reddish fawn, sprinkled with black hairs becoming lighter on the sides; below white, clearly defined from the fawn of the sides, all the fur above and below with slaty bases; ears oval, about three-quarters of an inch in length, with a thin covering of greyish hairs; feet covered with white hairs, soles somewhat dark in colour, with the usual six pads, the proximal one rounded; tail a little longer than the head and body, the rings running about 30 to an inch, towards its base lighter below than above, distally quite brown, bristles increasing in number towards the tail-tip, but hardly forming a brush.

Skull with the outer edge of the antorbital plate sloping forwards.

A rat in the collection of the Pretoria Museum closely resembles the description of this species, differing only in its greater size (head and body 6·50; tail 8·0; hind foot 1·40), and in the absence of the slaty bases in the fur of the under side.

Dimensions (of the type measured in the flesh).—Head and body 5·75; tail 6·50; hind foot 1·12. Of a specimen in alcohol: Head and body 5·10; tail 6·0; hind foot 1·2; skull length 1·50, breadth ·75; molar teeth of upper jaw ·25.

Distribution.—The type of this species, collected by J. ff. Darling at Mazoe, in Mashonaland, is in the British Museum, the South African Museum possesses an example from the same locality and collector; it has also been found near Bulawayo, in the Transvaal, and in Nyassaland.

MUS AURICOMIS, THE GOLDEN RAT.

Mus auricomis, DE WINTON, Proc. Zool. Soc., pp. 802, 807 (1896).

Description.—General colour above fawn-yellow, sprinkled with black hairs, lighter on the sides; below including the hands and feet pure white almost to the bases of the hairs, which are sometimes a pale grey; ears moderate, naked, save for a few yellow hairs; tail nearly naked, bi-coloured for the basal portion, brown for the terminal portion with a few short adpressed bristles increasing in number and length towards the tip, rings of the tail about 27 to the inch.

Allied to *M. chrysophilus*, but smaller with almost pure white belly fur and a more golden and less rufous tinge to the sides and upper parts.

Dimensions (of the type measured in the flesh).—Head and body 4·44; tail 5·78; hind foot ·94; skull length 1·22, breadth ·59; upper molars ·20.

Distribution.—The type of this species was also obtained at Mazoe in Mashonaland by Mr. Darling, and is now in the British Museum. Mr. de Winton records it at the same time from the neighbourhood of Bulawayo, where it was obtained by Mr. Selous. A skin in the South African Museum from Paarl, in the Colony, has been identified by Mr. de Winton with this species.

MUS PAEDULCUS, WAHLBERG'S RAT.

Mus paedulcus, SUNDEVALL, Oefvers. Akad. Forh., Stockholm (1846), p. 120 (1847).

Description.—General colour above greyish brown, darker in the middle of the back, greyer on the sides, below pure white with no slaty bases of the fur; along the back the hairs are fairly soft and thick and have a considerable admixture of black tips; ears rather

large, oval with a thin covering of grey hairs; extremities greyish white, claws almost concealed by the long hairs; the proximal tarsal pad much elongated; tail slightly shorter than the head and body, dark brown above and below, rings very fine, about 50 to the inch, bristles short, tail-tip in the two specimens examined white; mammae probably 3 pairs, *i.e.*, 1-2=6.

Skull with the incisive foramina barely reaching the anterior level of the molars; the front edge of the perpendicular plate of the antorbital foramen with a backwardly directed slope, so that its top angle is somewhat acute.

The above account is drawn up from a specimen in the South African Museum agreeing very well with the original description of Sundevall.

Dimensions (from a skin).—Head and body 5·5; tail 5·0; hind foot ·90; from ear-opening to nose-tip 1·10; skull too imperfect for measurement.

Distribution.—The type collected by Wahlberg, now in the Stockholm Museum, is described as coming from the interior of Kaffirland; the example in the South African Museum is from Pondoland in the extreme east of the Colony; no other localities are recorded.

MUS DOLICHURUS, THE LONG-TAILED RAT.

Mus dolichurus, SMUTS, Enum. Mam. Cap., p. 38, pl. ii. (1832); A. SMITH, S. Afr. Quart. Journ., ii., p. 155 (1834); THOMAS, Proc. Zool. Soc., p. 186 (1891); *Id.*, *ibid.*, p. 141 (1894) [measurements].

Mus arborarius, PETERS, Reise Mozamb. Säugeth., p. 152, pl. xxxv., fig. 7, pl. xxxvi., fig. 2 (1852).

Mus rutilans, PETERS, M. B. Akad. Berlin, p. 478, pl. ii., figs. 2, 3 (1876).

Description.—General colour above rich brown, rather darker along the middle of the back owing to the greater admixture of black-tipped hairs, becoming paler on the sides and pure white below, without slaty bases, fur of the upper surface very long and soft; tip of the nose not white, a dark spot in front of the eye; ears rather large, about half an inch in length; hands and feet somewhat slender, both covered with white hairs; proximal tarsal pad elongated; tail much longer than the head and body, bi-coloured chiefly owing to the bristles being black above and white below, rings fine though conspicuous, about 46 to the inch, bristles towards the tip of the tail

elongated and soft, forming a distinct brush; mammae 6 in number—1 pair pectoral, 2 pairs inguinal.

The very long tail with black pencil and fine rings distinguish this species from other South African rats.

Dimensions (from a skin).—Head and body 4·0; tail 5·25; hind foot ·87; skull length 1·1, breadth ·56; length of upper molars ·20.

Distribution.—The type described by Smuts was from the neighbourhood of Cape Town, whence the South African Museum has an example, Smith records it from Uitenhage. Outside South Africa it appears to be widely distributed from the Niger and Cameroons in the west and the Fayoum of Egypt in the east southwards through Central and East Africa to the Colony.

MUS NIGRICAUDA, THE BLACK-TAILED RAT.

Mus nigricauda, THOMAS, Proc. Zool. Soc., p. 266, pl. xiv., fig. 1 (1882); BOCAGE, Journ. Sci., Lisbon (2), v., p. 10 (1890).

Description.—General colour above yellow mixed with black, somewhat more yellow on the sides, fur coarse and long, below pure white without slaty bases to the hairs; ears large, thinly covered with short greyish hairs; extremities white, the hairs concealing the claws; hind feet comparatively short, the six pads large and rounded, occupying a considerable portion of the sole; tail shorter than the head and body, nearly naked at the base, but thickly covered distally above and below with long shining black hairs forming a slight pencil at the tip; molars broad and rounded with numerous well-marked small cusps.

Dimensions (from the type).—Head and body 6·2; tail 5·8; hind foot 1·01; upper molars ·21.

Distribution.—The type was obtained by C. J. Andersson on the Hountop River in Damaraland; other examples have been collected in Angola, where it appears to be fairly common. There are no specimens in the South African Museum.

MUS DAMARENSIS, THE DAMARALAND RAT.

Mus silaceus, apud THOMAS, Proc. Zool. Soc., p. 266 (1882) (nec Wagner).

Mus damarensis, DE WINTON, Ann. Mag. N. H. (6), xix., p. 349 (1897).

Description.—General colour reddish fawn or isabelline sprinkled with fine darker hairs, richest along the dorsal line, becoming greyer on the sides and below pure white, including the hands and feet; ears large, covered in and outside with short reddish hairs; tail about the same length as the head and body, covered distally with somewhat long liver-coloured hairs so as to be almost bushy, rings fine, about 50 to the inch; the feet are thick, the pads are large and crowded, the claws small and curved, are almost concealed by the hairs.

Dimensions (from the type).—Head and body 5·30; tail 5·30; hind foot ·95; skull length about 1·25, breadth ·62; upper molars ·24.

Distribution.—The type, obtained some years ago by Mr. C. J. Andersson in Damaraland, was formerly identified with *M. silaceus*, but has recently been shown to be distinct by de Winton.

MUS COUCHA, THE WHITE-NOSED MOUSE.

Mus coucha, A. SMITH, App. Report Exped. Explor. S. Africa, p. 43 (1836); THOMAS, Proc. Zool. Soc., p. 266 (1882); JENTINK, Notes Leyd. Mus., p. 174 (1887).

Mus silaceus, WAGNER, Arch. Naturgesch., i., p. 11 (1842).

Mus microdon, PETERS, Reise Mozamb. Säugeth., p. 149, pl. xxxv., figs. 5, 6, pl. xxxvi., fig. 1 (1852).

Mus sp., THOMAS, Proc. Zool. Soc., p. 13 (1888); POUSARGUES, Ann. Sci. Nat. (8), iv., p. 14 (1897).

Description.—General colour dark brown on the back, growing paler on the sides and dirty white below, all the fur above and below with strong slaty bases, the fur of the back long, soft with pale brown and black tips intermixed, the latter much more abundant along the middle of the back; tip of the nose white; ears moderate and oval; feet pure white, tarsal pads all rounded, claws almost concealed by the long white hairs which project beyond them; tail about the same length or shorter than the head and body, the rings numbering about 44 to the inch, covered with short bristles, dark above, white below, hardly longer towards the tip; mammae 16—5 pairs pectoral, 3 pairs inguinal in the specimen examined, but often exceeding this number up to 24.

Skull with a large antorbital foramen not much narrowed below with small not well-developed plate.

Synonymy.—This rat is found over the greater part of Africa, and it is in consequence of this and of the fact that it varies to a great extent throughout its range both in size and colour that it has received the names recorded above in the synonymy; it seems probable, however, as M. Pousargues and Mr. Thomas have stated above, that there is only one varying species.

Dimensions (from a specimen in alcohol).—Head and body, 3·60 (of a dried skin 5·0); tail 3·50; hind foot ·85; from ear to tip of nose 1·20.

Distribution.—The type of the species was obtained by Sir A. Smith in Bechuanaland, and the species is also known from Damara-land, while the South African Museum contains examples from the neighbourhood of Cape Town, Namaqualand and Griqualand West; outside South Africa it is recorded from French Congoland and Abyssinia through Central and East Africa and Nyassaland to Mozambique.

MUS COLONUS, BRANTS' RAT.

Mus colonus, BRANTS, Muizen, p. 124 (1827); SMUTS, Enum. Mamm. Cap., p. 37 (1832); A. SMITH, S. Afr. Quart. Journ., ii. p. 154 (1834); ID., Illustr. Zool. S. Afr. Mam., pl. xlvii., fig. 3 (1849); PETERS, Reise Mozamb. Säugeth., p. 151 (1852); GRILL et SUNDEVALL, Victorin Zool. Anteck. k. Vet. Akad. Handl. Stockholm, ii., p. 18 (1858); THOMAS, Ann. Mag. N. H. (6), x., p. 181 (1892).

Mus natalensis, A. SMITH, S. Afr. Quart. Journ., ii., p. 156 (1834); ID., Illustr. Zool. S. Afr. Mam., pl. xlvii., fig. 2 (1849); MATCHIE, Säugeth. Deutsch Ost Afrika, p. 51 (1895); DE WINTON, Proc. Zool. Soc., p. 807 (1896).

Mus mariquensis, A. SMITH, App. Report Exped. Explor. S. Africa, p. 43 (1836); DE WINTON, Proc. Zool. Soc., p. 803 (1896).

Description.—General colour very dark brown, almost black along the middle line of the back owing to the admixture of long black hairs, rather paler and more rufous on the sides, below dirty white with dark slaty bases to the fur; nose-tip white, ears oval, covered with a few sparse brown hairs, feet rather slender, dirty white, tail shorter than head and body, brown above, paler below owing to the colour of the short, stiff bristles with which it is thinly clothed, rings coarse and conspicuous, about 40 to the inch; mammae according to Thomas 10 in number—3 pairs pectoral and 2 pairs inguinal.

Dimensions (from a skin).—Head and body 5·50; tail 4·80; hind foot ·92.

Distribution.—The type is said by Brants to have come from the neighbourhood of Algoa Bay; Victorin obtained his specimens at Rondebosch near Cape Town, and the South African Museum possesses examples from Pondoland and Rustenberg in the Transvaal.

MUS VERROXI, VERREAUX'S RAT.

Mus verroxi, A. SMITH, S. Afr. Quart. Journ., ii., p. 156 (1834).

Description.—General colour dark speckly brown, a little paler on the sides and bluish white below, with slaty bases to the fur throughout, no marked line of distinction of colour between the sides and lower surface; tip of the nose not white; ears long and rounded very nearly naked; extremities dirty white, tarsal pads moderate, six in number, the two proximal ones somewhat oval; tail considerably longer than the head and body, distinctly bi-coloured, the rings fine and not easily distinguishable, about 50 to the inch, tail-tip black and slightly tufted; mammae, in the only specimen in which they could be made out, 10 in number—3 pairs pectoral and 2 pairs inguinal.

The above description, taken from a specimen in the South African Museum, agrees well with *M. verroxi*, as described by Smith, except that the nose-tip is not white as asserted by Smith.

Dimensions (from a skin).—Head and body 5·25; tail 6·0; hind foot ·90.

Distribution.—The type is described as being from the neighbourhood of Cape Town; the specimens in the South African Museum are from Rondebosch in the Cape Division.

MUS MUSCULUS, THE HOUSE MOUSE.

Mus musculus, LINNAEUS, Syst. Nat., 12th ed., i., p. 83 (1766); A. SMITH, S. Afr. Quart. Journ., ii., p. 154 (1834); LAYARD, Cat. Mam. S. Afr. Mus., p. 50 (1862).

Mus orientalis, CRETZSCHMAR, Atlas zu der Reise von Rüppell, Säugethiere, p. 76, pl. xxx. (1826); GRILL ET SUNDEVALL, Victorin Zool., Anteck. k. Vet. Akad. Handl. Stockholm, ii., p. 18 (1858).

Mus modestus, WAGNER, Arch. Naturges., i., p. 14 (1842); ID., Schreb. Säugeth. Suppl., iii., p. 432, pl. 181 c (1843).

Description.—General colour above brown with a yellowish tinge, darkest along the back, lighter on the sides; below greyish, the fur slaty with somewhat paler tips, never white; ears large and nearly naked, when pressed forwards reaching the eye; hands and feet grey, never white, slender with the usual number of pads which are all circular; tail usually about the same length as the head and body, dark coloured, thinly covered with the usual bristles not increasing in length towards the tip, towards the base somewhat lighter below than above but towards the tip dark all round, rings of the tail slender, about 50 to the inch; mammae 10 in number—3 pairs pectoral, 2 pairs inguinal.

Dimensions (from a specimen in alcohol).—Head and body 3·20 (skin 3·70); tail 3·45; hind foot ·62; from ear to nose-tip ·90; skull length ·80, breadth ·45; upper molars ·15.

Distribution.—Cosmopolitan, being found in the habitations of civilised man throughout the world; it probably originated in the East; it is common in Cape Town houses and also in Port Nolloth and Pretoria and probably all other towns of South Africa of any size.

MUS MINUTOIDES, THE WHITE-BELLIED FIELD MOUSE.

Mus minutoides, A. SMITH, S. Afr. Quart. Journ., ii., p. 157 (1834); THOMAS, Proc. Zool. Soc., p. 266 (1882); *Id.*, *ibid.*, p. 13 (1888) [synonymy]; DE WINTON, Ann. Mag. N. H. (6), xx., p. 320 (1897).

Mus minimus, PETERS, M. B. Akad. Berlin, p. 274 (1852); *Id.*, Reise Mozamb. Säugeth., p. 153, pl. xxxiii., fig. 2, pl. xxxv., fig. 8 (1852); GRILL ET SUNDEVALL, Victorin Zool. Anteck. k. Vet. Akad. Handl., Stockholm, ii., p. 17 (1858).

Description.—Small and slender, general colour above fawn, rather darker on the middle of the back through the admixture of black hairs; fur coarse with pale slaty bases; below pure white without slaty bases, the line of demarcation of colour being strictly defined; ears moderate rounded and almost naked, a little darker along their margins; hands and feet scantily covered with white hairs, the claws rather large and not concealed by the hairs; pads normal in number and rounded, the skin between on both palms and soles being covered with numerous little rounded swellings; tail rather shorter than the head and body, pale, and covered with a fairly thick coating of white bristles not forming a bushy tip; mammae 8 to 10—2 to 3 pairs pectoral, 2 pairs inguinal.

Skull short and rather broad, anterior upper molar large, longer

than the two posterior ones taken together, the anterior portion elongated and rather pointed, often bearing an extra heel in front not found in other South African species. It is chiefly on this that the genus *Leggada* is founded, but the character is not sufficiently distinct or constant to afford grounds for generic distinction.

Dimensions (from a specimen in alcohol).—Head and body 2·40 (in skin 2·90); tail 1·90; hind foot ·50; from ear-opening to nose-tip ·70; skull length ·77, breadth ·40; upper molars ·15.

Distribution.—The type of this species was obtained near Cape Town by Sir A. Smith; the South African Museum possesses examples from various parts of the Cape Division, from Clanwilliam, Natal, and Delagoa Bay, and it is recorded from Knysna and Damaraland; it is, therefore, probably widespread throughout South Africa; outside these limits it extends through Mozambique and Nyassaland as far north as Wadelai and Uganda.

The following species are not represented in the collections of the South African Museum, and cannot at present be satisfactorily identified :—

MUS LEHOCHLA.

Mus lehochla, A. SMITH, App. Report Exped. Explor. S. Africa, p. 43 (1836); *Id.*, Illustr. Zool. S. Afr. Mam., pl. xlvii., fig. 1 (1849).

Description.—General colour above dark brown mixed with rufous, below white with a rufous tinge; eyebrow white; nose-tip (according to Smith's plate) white; tail a little longer than the head and body, brown and sparsely haired.

Dimensions.—Head and body 4·75; tail 5·0; hind foot ·82.

Distribution.—The type was obtained from Lataku near Kuruman in Bechuanaland, and was found in brushwood; it is perhaps a multimammate species allied to *Mus coucha*, but with a longer tail.

MUS NAMAQUENSIS.

Gerbillus namaquensis, A. SMITH, S. Afr. Quart. Journ., ii., p. 160 (1834).

Mus namaquensis, DE WINTON, Proc. Zool. Soc., p. 802 (1896).

Description.—General colour above fawn, pencilled with black especially posteriorly, sides lighter; below bluish white; slaty bases above and to the sides, but not to the belly hairs; ears very long and broad with short white hairs inside, extremities covered with

white hairs concealing the claws; tail a little shorter than the head and body with a short, scanty covering of bristles, black above white below (Smith).

This species seems allied to *M. paedulus* and *M. auricomis*.

Dimensions.—Head and body 5·50; tail 4·75.

Distribution.—Namaqualand.

MUS CAFFER.

Mus caffer, A. SMITH, S. Afr. Quart. Journ., ii., p. 157 (1834).

Description.—General colour blue-grey or brown-grey, lighter on the sides, below greyish white; all the fur very long and soft; ears long and oval, the inner surface with a sprinkling of minute white hairs the outer with blackish hairs; feet greyish white; tail thinly covered with very short fine greyish hairs (Smith).

Dimensions.—Head and body 3·50; tail 3·0.

Distribution.—Kaffirland.

MUS MUSCARDINUS.

Mus muscardinus, WAGNER, Schreb. Säugeth. Suppl., iii., p. 430 (1843).

Description.—Rusty yellow above, white below, ears naked; feet white, tail shorter than the head and body, clothed with dark bristles above and white ones below.

Dimensions.—Head and body 5·10; tail 3·20; hind foot ·75.

Distribution.—Kaffraria, collected by Krebs.

GEN. SACCOSTOMUS.

Saccostomus, PETERS, M. B. Akad. Berlin, p. 258 (1846).
Type *S. campestris*.

Description.—Robust, mouse-like animals with internal cheek pouches, short tails and limbs; skull with the infraorbital opening not much narrowed below but more or less triangular; incisors small not grooved; molars like those of *Mus* but with the tubercles soon lost, so that in most specimens the teeth consist of transverse ridges of enamel with depressions between.

This genus is allied to *Mus*, but differs in its shorter tail and in

being provided with cheek pouches, in this resembling *Cricetus*, containing the Hamsters of the northern part of the Old World.

The genus is practically confined to South Africa, as the only other species described, besides those mentioned below, is *S. elegans* from the Nyika plateau in North Nyassaland.

SACCOSTOMUS CAMPESTRIS, THE POUCHED RAT.

Saccostomus campestris, PETERS, M. B. Akad. Berlin, p. 258 (1846); DE WINTON, Ann. Mag. N. H. (7), i., p. 6 (1898).

Saccostomus lapidarius, PETERS, Reise Mozamb. Säugeth., p. 167, pl. xxxiv., fig. 3, pl. xxxv., fig. 12, 1852; BOCAGE, Journ. Sci. Lisb. (2), v., p. 9 (1890) [habits]; LORENTZ, Ann. kk. Hofmus. Wien, ix, notiz. p. 65 (1894) [Zambesia].

Description.—Form somewhat stout, the head especially being thick and broad; general colour above and on the sides dark drab brown, the basal portion of the fur slaty, the tips chiefly pale brown but with many black ones intermingled, darkest along the middle of the back; below pure white with no slaty bases to the fur, the line of demarcation between the colours very distinct; whiskers fine and mostly white; ears of moderate size, rounded, with a few brown hairs only, about $\cdot 60$ inches in length; limbs rather short; hands and feet white with pads and claws as in *Mus*, the proximal tarsal pad rounded; tail less than half the length of the head and body not scaly, with traces of the rings towards the base, covered with comparatively long rather outstanding hairs, dark above light below; 10 mammae—3 pairs pectoral, 2 pairs inguinal; in the specimen examined there was no paler spot behind the ears as described by Peters.

The middle upper molar does not bear the extra anterior outer cusp present in *S. mashonae*.

Dimensions (from a spirit-preserved specimen).—Head and body 5·0; tail 1·70; hind foot $\cdot 65$; from ear-opening to nose-tip 1·30; skull length 1·30, breadth $\cdot 70$; upper cheek teeth $\cdot 20$.

Distribution.—This species was originally described from the Zambesi valley by Peters; it is also recorded from Nyassaland, Angola, and Damaraland, while there are specimens in the South African Museum which seem to be referable to this species from the Albany, Griqualand West, and the Bedford districts of the Colony, and from Zululand; it is, therefore, fairly widely distributed over the south-eastern parts of Africa.

SACCOSTOMUS MASHONAE, THE MASHONALAND POUCHED RAT.

Saccostomus mashonae, DE WINTON, Proc. Zool. Soc., pp. 804, 805 (1896).

Description.—General colour above iron-grey, sides somewhat paler, below slaty grey with grey drab tips to the fur; tail thinly covered with hair with longer white hairs standing out somewhat like those on the tail of a shrew.

Skull with the middle upper molar with a small though well-developed extra outer anterior cusp, not present in the other species.

This and the colour distinguish this species from *S. campestris*.

Dimensions (of the type).—Head and body 5·27; tail 1·37; hind foot ·87; skull length 1·39, breadth ·68; upper molars ·19.

Distribution.—The type of this species was obtained by Mr. J. ff. Darling at Mazoe in Mashonaland; there is no example in the South African Museum.

SACCOSTOMUS ANDERSSONI, ANDERSSON'S POUCHED RAT.

Saccostomus lapidarius, apud THOMAS, Proc. Zool. Soc., p. 266, pl. xiv., fig. 2 (1882) (nec Peters).

Saccostomus mashonae, apud DE WINTON, Ann. Mag. N. H. (6), xx., p. 322 (1897) (nec de Winton, Proc. Zool. Soc. (1896), p. 804).

Saccostomus anderssoni, DE WINTON, Ann. Mag. N. H. (7), i., p. 6 (1898).

Description.—Resembling *S. campestris* in form and dimensions but differing in colour, being of a light, somewhat sandy tint, instead of drab brown.

Distribution.—Damaraland and Angola.

SACCOSTOMUS FUSCUS, THE SMALL POUCHED RAT.

Saccostomus fuscus, PETERS, Reise Mozamb. Säugeth., p. 168, pl. xxxvi., fig. 4 [animal], pl. xxxv., fig. 13 [skull] (1852).

Description.—This species resembles the previous one, but is smaller, and has a more pointed nose and more thickly haired ears; below it is grey, and its claws are black.

Dimensions.—Head and body 3·25; tail 1·10; hind foot ·70; skull length 1·0.

Distribution.—This species was also discovered by Peters further

south than the former one, in the neighbourhood of Inhambane in Southern Mozambique. There is no specimen in the South African Museum.

GEN. ACOMYS.

Acomys, IS. GEOFFROY, Ann. Sci. Nat. (2), x., p. 126 (1838).
Type *A. cahirinus*.

Small, mouse-like animals with the hinder part of the back covered with flattened, grooved, inflexible spines; 6 mammae—1 pair axillary, 2 pairs inguinal.

Skull with very small incisive foramina and with the coronoid process of the mandible but little developed; in other respects resembling *Mus*.

About thirteen species of spiny mice are described, the bulk of which are found in Africa and in the drier south-western parts of Asia; one species is known from Celebes.

ACOMYS SUBSPINOSUS, THE SPINY MOUSE.

Mus subspinosus, WATERHOUSE, Proc. Zool. Soc., p. 104 (1837).

Acomys subspinosus, THOMAS, Ann. Mag. N. H. (6), xviii., p. 269 (1896).

Description.—Back covered with flat, bristle-like spiny hairs; body above greyish brown getting paler on the sides, below pure white; a yellowish ring round the eyes; ears moderate; tail shorter than the head and body.

Dimensions (of the type).—Head and body 3·33; tail 2·93; from ear-opening to tip of nose ·88; hind foot ·70.

Distribution.—The type is described as having come from the "Cape of Good Hope"; no more exact locality is recorded; there is no specimen in the South African Museum.

ACOMYS SELOUSI, SELOUS' SPINY MOUSE.

Acomys selousi, DE WINTON, Proc. Zool. Soc., p. 807, pl. xl., fig. 2 [animal], (1896).

Description.—Smoky rufous-brown or coffee-coloured above, more smoky on the face and darker on the back; clear chestnut-brown on the cheeks, sides, and on a patch behind the ear; below pure white the two colours sharply distinguished; tail longer than the head and body, brown above paler below.

Dimensions.—Head and body 3·25 ; tail 3·63 ; hind foot ·70 ; skull length 1·0, breadth ·50 ; upper molars ·20.

Distribution.—The type was obtained by Mr. Selous on his farm near Bulawayo ; it has since been recorded from Nyassaland ; there are no specimens in the collections of the South African Museum.

GEN. DASYMYS.

Dasymys, PETERS, M. B. Akad. Berlin, p. 12 (1875). Type *D. incommutus*.

Mouse-like animals with moderate, somewhat hairy ears and rather coarse fur, tail moderate, scaly and sparsely haired ; skull somewhat intermediate between that of *Gerbillus* and *Mus* ; lower branch of the zygomatic process produced forwards in hooked shape ; incisors plain, front molars the longest, the posterior laminae of the first and anterior laminae of the second and third upper molars large and complicated.

DASYMYS INCOMMUTUS.

Mus incommutus, SUNDEVALL, Oefvers. Akad. Forh. Stockholm (1846), p. 120 (1847).

Dasymys gucinzii, PETERS, M. B. Akad. Berlin, p. 12, pls. i., ii. (1875).

Dasymys incommutus fuscus, DE WINTON, Proc. Zool. Soc., p. 804 (1896).

Description.—General colour brown ; darkest on the middle of the back, paler on the sides, below grey, feet dark ; ears rounded, fairly clothed with hairs ; feet with the pads and claws as in *Mus*, tail shorter than the head and body, with scaly rings about 28 to the inch, bedecked with a few scanty short bristles.

Geographical race.—A dark variety is described by de Winton from Mashonaland resembling the type in size and general characters, but differing in colour, being a uniform sooty black with only slight yellow grizzling ; the upper incisors are deep orange-red, the lower brownish honey coloured.

Dimensions (of the type).—Head and body 6·25 ; tail 5·83 ; hind foot 1·37. Of the dark variety taken from the flesh : head and body 6·25 ; tail 5·75 ; hind foot 1·25 ; skull length 1·45, breadth ·79 ; upper molars 28.

Distribution.—The type of the species was obtained by the Swedish collector Wahlberg, near Durban, that of the dark variety at Mazoe, in Mashonaland, by Mr. ff. Darling; it is also recorded from Nyassaland. Mr. Marshall has recently presented an example to the South African Museum from Salisbury.

GEN. ARVICANTHIS.

Arvicanthis, LESSON, N. Tabl. R. A. Mamm., p. 147, 1842. Type *A. niloticus*.

Isonys, SUNDEVALL, k. Vet. Akad. Handl. Stockholm (1842), p. 219 (1843). Type *A. niloticus*.

Rat-like animals with hairy ears, covered with a woolly under-fur, through which project the longer, coarser hairs; the first and fifth fingers and toes are very short, much more so than in the true rats. The plan of coloration is never plain, but consists of lines or spots on the back.

Skull and dentition as in *Mus*; mammae 8—2 pairs pectoral, 2 pairs inguinal.

This genus is hardly separated from *Mus* by any definite characters, and its recognition is more a matter of convenience than anything else; some half-dozen species are described from various parts of Africa, while one extends to the south-western part of Asia.

ARVICANTHIS PUMILIO, THE STRIPED MOUSE.

Mus pumilio, SPARRMAN, k. Vet. Akad. Handl., p. 339, pl. vi. (1784); ID., Voyage to Cape, English trans., 8vo ed. ii., p. 375, pl. vii. (1785); BRANTS, Muizen, p. 103 (1827); SMUTS, Enum. Mam. Cap., p. 36 (1832); A. SMITH, S. Afr. Quart. Journ., ii., p. 153 (1834); ID., Illustr. Zool. S. Afr. Mam., pl. xlvii., fig. 1 (1849); SUNDEVALL, Oefvers. Akad. Forh. Stockholm 1846, p. 88 (1847); GRILL, Victorin Zool. Anteck. k. Vet. Akad. Handl. Stockholm, ii., p. 17 (1858); LAYARD, Cat. Mam. S. Afr. Mus., p. 50 (1862); THOMAS, Proc. Zool. Soc., p. 266 (1882).

Mus lineatus, F. CUVIER, Hist. Nat. Mam., livr. 61 (1829).

Mus donovani, LESSON, Man. Mam., p. 268 (1827).

Mus vittatus, WAGNER, Arch. Naturg., viii., p. 11 (1842).

Mus septemvittatus, SCHINZ, Synops. Mam., ii., p. 155 (1845).

Mus striatus, SUNDEVALL, Oefvers. Akad. Forh. Stockholm 1846, p. 88 (1847).

A. PUMILIO, sub-sp. DILECTUS.

Arvicanthis pumilio dilectus, DE WINTON, Proc. Zool. Soc., p. 803 (1896).

A. PUMILIO, sub-sp. BECHUANAE.

Isomys p. bechuanae, THOMAS, Proc. Zool. Soc., p. 551 (1892).

Description.—General colour greyish brown with a slight tinge of yellow, under-fur soft, fine, and dark slaty in colour, through which project considerably coarser hairs, white, black, and yellowish brown; along the back from the shoulders to the root of the tail run four black longitudinal stripes, separated by three narrower interspaces, of which the two outer are a little paler than the inner, of the same colour as the back; the black stripes vary considerably in distinctness, the two median ones usually originating in a single dark median stripe on the head from between the eyes and meeting at the root of the tail; below pure white, but the hair not very thick, so that the slaty black of the skin is visible, giving the belly a dirty white colour; head rat-like, a pale ring round the eye, the ears rounded, anteriorly and posteriorly with a fairly thick covering of rufous hairs with a black edging along the inner margin of the conch; extremities the same colour as the back, but paler; skin of the soles and palms dark, almost black, toes as in *Mus*, but the first and fifth proportionately shorter, pads as in *Mus*, but the second proximal one very small; claws black; tail scaled and ringed, about 39 to the inch, covered with bristles increasing in length towards the tip; the bristles are chiefly black along the dorsal line, and pale yellow below, but the skin of the tail is black throughout; mammae 8—2 pairs pectoral, 2 pairs abdominal.

Geographical Races.—The striped rat varies very considerably both in size and in colour.

In Bechuanaland there occurs a large, almost sandy race with the dorsal stripes very faint and with pale-coloured ears, described by Thomas.

In Mashonaland on the other hand a darker race than the normal is found with very dark, well-defined dorsal stripes and dusky belly washed with orange.

The collection of the South African Museum consists chiefly of spirit-preserved examples which are not of much service for the discrimination of slight colour variations, but some skins from Pondoland in the extreme east of the Colony appear to approach Mr. de Winton's *dilectus* race, and are certainly distinctly darker

and more richly coloured than what may be called the typical race from the neighbourhood of Cape Town.

Dimensions.—As has been remarked by former writers, there is a great variation in the dimensions of this species. In the case of spirit preserved specimens in the South African Museum, the length of the head and body varies from 3·60 to 4·90, and the tails from 3·70 to 5·90. The following are the dimensions of an individual measured in the flesh from the neighbourhood of Cape Town: Head and body 4·30; tail 4·10; hind foot 1·0; from ear to tip of nose ·88.

The dimensions of sub-species *bechuanæ* measured in the flesh are: Head and body 5·0; tail 4·62; hind foot 1·0. Of sub-species *dilectus*: Head and body 4·25; tail 3·25; hind foot ·75; the dimensions of a typical skull are—length 1·10, breadth ·60; upper tooth row ·20.

Distribution.—The type of this species was obtained by Sparrman on the banks of the Slangen River, close to Cape St. Francis, in what is now the Humansdorp Division of the Colony; the species is very common everywhere all over South Africa, and extends northwards to Great Namaqualand on the west, and through Nyassaland as far as Mianzini near Lake Naivasha in British East Africa, whence Thomas has described a third sub-species, *A. p. dimidiatus*, rather smaller and more brightly coloured than the typical one. As already stated, the two other sub-species, *A. p. bechuanæ* and *A. p. dilectus*, come from Bechuanaland and Mazoe in Mashonaland respectively.

ARVICANTHIS DORSALIS, THE SINGLE-STRIPED MOUSE.

Mus dorsalis, A. SMITH, Illustr. Zool. S. Afr. Mamm., pl. xlv., fig. 2 (1849); BOCAGE, Journ. Sci. Lisbon (2), v., p. 16 (1890).

Arvicanthus dorsalis, DE WINTON, Proc. Zool. Soc., p. 803 (1896).

Description.—General colour above reddish brown, the fur coarse like that of the other species; a single median black stripe running from the neck to the root of the tail; below rusty white; the skin white, not slaty as in the other species; ears rather broad, covered with coarse hairs, mingled reddish and black, the former prevailing; extremities of the same colour as the sides but white inside; the first and fifth digit of the forelimb very small and rudimentary, the latter provided with a small flat nail, so that the hand bears only three clawed digits; sole of the hind foot with three well-developed pads only, those at the base of the first and fifth toes and the one next to these proximally being very small or absent.

Tail longer than the head and body, but in other respects resem-

bling that of *A. pumilio*. Mammae 8—2 pairs pectoral, 2 pairs inguinal. Incisors broad and stout but smooth, not furrowed.

Dimensions (from a specimen preserved in spirit).—Head and body 4·70; tail 5·60; from ear-opening to tip of nose 1·40; hind foot 1·10. Of a specimen measured in the flesh by Mr. Darling: Head and body 5·12; tail 5·25; hind foot 1·12; skull length 1·20, breadth ·67; upper molars ·25.

Distribution.—Sir A. Smith, the describer of the species, states that it is common to the north of the Orange River, but rare to the south; it has also been obtained within our limits by Mr. Darling at Mazoe, in Mashonaland, and beyond in Angola, Mozambique, and Nyassaland.

GEN. GOLUNDA.

Golunda, GRAY, Charlesw. Mag., N. H., i., p. 586 (1837). Type *G. ellioti*.

Pelomys, PETERS, Reise Mozamb. Säugeth., p. 157 (1852). Type *G. fallax*.

Rat-like animals with short rounded heads and somewhat coarse bristly fur; the fifth finger of the forelimb is very short and rudimentary; the tail is long, scaly, and rat-like; skull with compressed palate; upper incisors grooved, molars low and broad with tubercles arranged as in *Mus*, when worn exhibiting a peculiar series of semi-circular flattened lobes arranged in a triple row in the upper, in a double row in the lower jaw.

The grooving of the incisors and the shortness of the fifth finger at once separate this genus from *Mus*, which it otherwise closely resembles.

Four species are recognised. One of these is found in India, two in West Africa, and the remaining one, described below, in South Africa.

GOLUNDA FALLAX, THE SWAMP RAT.

Pelomys fallax, PETERS, Reise Mozamb. Säugeth., p. 157, pl. xxxiii., fig. 3, pl. xxxv., fig. 9 (1852); BOCAGE, Journ. Sci. Lisb. (2), v., p. 47 (1890) [habits in Angola].

Golunda fallax, DE WINTON, Proc. Zool. Soc., p. 804 (1896).

Description.—General colour above speckled dark brown and yellowish, somewhat paler on the sides and grey below, fur harsh and bristly, a somewhat indistinct dark dorsal stripe along the back; tip of the nose rufous-brown, ears moderate, round, fairly covered

with rufous hairs; fifth finger very short, but clawed; tarsus with only five pads, the proximal one being absent, and the three next to it being very small; tail shorter than the body, dark above, paler below, covered with sparse bristles, the rings about 25 to an inch; mammae 8—2 pairs pectoral, 2 pairs inguinal.

Skull with the nasal region exceedingly short and broad; incisors with a strong longitudinal furrow rather towards the outer side of the tooth, molars much as in *Mus* but rather broader.

Dimensions.—Head and body 6·75; tail 5·25; hind foot 1·37 skull length 1·12. (Peters.)

Distribution.—This species was described by Peters from the Zambesi Valley in Mozambique. It has since been recorded from Nyassaland and Angola; within our region it was obtained by Mr. Darling at Mazoe, in Mashonaland. It is not represented in the collections of the South African Museum.

SUB-FAMILY SIGMODONTINAE.

GEN. MYSTROMYS.

Mystromys, WAGNER, Arch. Naturges, i., p. 132 (1841). Type *M. albicaudatus*.

Rat-like animals with soft, rather woolly fur, and large broad ears, with short tails and a somewhat hairy tarsus; skull with the antorbital foramen hardly at all narrowed below, and the perpendicular plate but little developed, not extending forwards beyond the upper root of the zygoma; incisors ungrooved, molars rooted, those of the upper jaw with the tubercles arranged in a double instead of a treble row as in the *Murinae*, those of the lower jaw as in the *Murinae* in a double row.

This genus appears to be confined to Central and South Africa, one species being described by Noak from the former region.

To the same sub-family belong the Hamsters of the Palearctic region; a number of curious rat-like genera from Madagascar and from the New World, in neither of which two latter places are any true *Murinae* indigenous.

MYSTROMYS ALBICAUDATUS, THE WHITE-TAILED RAT.

Otomys albicaudatus, A. SMITH, S. Afr. Quart. Journ., ii., p. 148 (1834); ID., Illustr. Zool. S. Afr. Mam., pl. xxxiii. (1849).

Mystromys albipes, WAGNER, Arch. Naturg., i., p. 132 (1841); ID. Schreb. Säugeth. Suppl., iii., p. 500, pl. clxxvi. a (1843).

Malacothrix albicaudatus, WAGNER, Schreb. Säugeth. Suppl., ii. p. 498 (1843).

Mystromys albicaudatus, DE WINTON, Ann. Mag. N. H. (7), i., p. 7 (1898).

Description.—General colour dark brown above, somewhat paler below, the fur being long, soft, and somewhat woolly, dark slate for the greater part of its length with brown tips; space round the nose and chin pure white; ears very large, broad, and patulous about $\cdot 7$ by $\cdot 6$ in., the inner half of the conch nearly white, the outer half black, covered anteriorly and posteriorly with a few silvery and black hairs; limbs slender, hands and feet covered with white hairs lengthened so as to almost conceal the claws, pads normal in number but the two proximal ones of the sole very small and rounded, the naked portion of the sole very narrow, much encroached on by the long white hairs on either side, so that the whole tarsus has a very hairy appearance; tail short, less than half the length of the head and body, almost white, obscurely ringed, but these are almost hidden by the dense covering of short hairs above, with a few black hairs intermixed, below pure white.

Incisors smooth and very pale yellow.

The above description is drawn up from a specimen in the South African Museum which has been compared with the type in the British Museum. It may be noticed that in Smith's original description the incisors are described as smooth, in the subsequently published 'Illustrations' as grooved.

Dimensions (from the example in alcohol in the South African Museum).—Head and body $3\cdot 85$; tail $1\cdot 68$; hind foot $\cdot 95$; from ear-opening to nose-tip $1\cdot 20$; skull length $1\cdot 22$, breadth $\cdot 65$; upper tooth row $\cdot 25$.

Distribution.—Sir A. Smith met with this species in the neighbourhood of Grahamstown and to the north of the Orange River; the single example in the Museum is also from the neighbourhood of Grahamstown. There is an example in the British Museum from the Transvaal.

MYSTROMYS LANUGINOSUS, THE LARGER WHITE-TAILED RAT.

Euryotis lanuginosa, LICHTENSTEIN, Verzeichn. Säugeth. u. Vögel. Kaffirland, Berlin, p. 10 (1842).

Description.—General colour above light brown, below white, the hair thick, soft and rather woolly, dark slate for the greater part of its length, the tips mingled brown and white, the former predomi-

nating along the middle of the back, the latter on the sides; tip of the snout somewhat pale, not white, ears very large, about .9 in. by .75, darker towards the margin, covered with thin greyish hairs; limbs short and slender, hands and feet white above, the claws almost concealed by the long white hairs, pads as in the other species; tarsus with a very narrow naked line almost concealed by the long white hairs; tail short, obscurely ringed, covered with a thick coating of hairs, white above and below.

Dimensions (from an old stuffed specimen).—Head and body 7.0; tail broken about 2.0; hind foot 1.0; from ear-opening to nose-tip 1.40; skull length about 1.45, breadth .72; upper cheek teeth .25.

Distribution.—The single specimen from which the above account is taken was obtained some years ago on the Cape Flats, and is now in the South African Museum. Possibly it may turn out to be an undescribed species.

FAMILY BATHYERGIDAE.

GEN. BATHYERGUS.

Bathyergus, ILLIGER, Prodr. Syst. Mam., p. 86 (1811). Type *B. maritimus*.

Burrowing rodents with small eyes, no ear conch, and the toes of the fore feet with specially long claws, of which that of the second digit is considerably the longest; hind foot with the third toe the longest.

Skull massive with an almost straight upper profile and a small sub-circular antorbital foramen.

Dentition.—i. 1/1; c. 0/0; p.m. 1/1; m. 3/3 = 20; upper incisors large, broad, and grooved, lower incisors also large but smooth; molars simple with re-entering folds in youth only.

Only the single species below described is known.

BATHYERGUS MARITIMUS, THE SAND MOLE.

Mus maritimus, GMELIN, Linn. Syst. Nat.; p. 140 (1788).

Mus suillus, SCHREBER, Säugeth., iv., p. 715, pl. cciv. B (1792).

Georychus maritimus, A. SMITH, Descr. Cat. S. Afr. Mus., p. 28 (1826).

Bathyergus maritimus, SMUTS, Enum. Mam. Cap., p. 48 (1832); A. SMITH, S. Afr. Quart. Journ., ii., p. 170 (1834); LAYARD, Cat. Mam. S. Afr. Mus., p. 55 (1862).

Orycterus maritimus, WATERHOUSE, Ann. Mag. N. H. (1) viii., p. 81, pl. ii., fig. 1 [skull], (1842).

Description.—General colour slaty grey with a distinct brown tinge on the back, fur soft, thick and rather woolly, slaty for the greater part of its length, the tips on the back being pale brown; head somewhat acutely pointed, a considerable flesh-coloured patch surrounding the nostrils and reaching the edge of the upper lip; the incisors so long that they are always visible, the lips not being large enough to cover them; eyes about as large as the head of a large pin, the eyeballs being about $\cdot 10$ in. in diameter; external ears absent, a small round hole surrounded by a fleshy coloured bare margin marking the external opening of the meatus; limbs very short, the fore feet with five toes all with large strong claws much better developed than those of the hind feet, the second the longest, then the third, fourth, fifth, and first in order; hind foot with a broad naked sole, along the sides of which run fringes of white stiff bristle-like hairs; the five toes of the hind foot are all clawed, the middle one being the longest, the claws somewhat flattened and nail-like; tail very short, covered on the sides and below with stiff white bristles.

Incisors white, those of the upper jaw strongly grooved down the middle of the tooth; those of the lower very long, sometimes over three inches, of which half protrude beyond the socket; these teeth are separated by a slight interval; the molars somewhat oval in section, decreasing in size from in front backwards, surrounded by a ring of enamel with infoldings gradually disappearing with age.

White and piebald varieties of this animal are not uncommon.

Dimensions (from a skin).—Head and body 16·50; tail 1·25; hind foot 1·87; from ear-opening to nose-tip 4·50; skull length 2·70, breadth 1·90; upper molars $\cdot 50$.

Distribution.—This animal appears to be found only along the coast and never inland, it is abundant near Cape Town, and seems to extend northwards to Namaqualand, and eastwards as far as Knysna certainly, perhaps as far as Bathurst. All the specimens in the South African Museum are from the neighbourhood of Cape Town.

GEN. GEORYCHUS.

Georychus, ILLIGER, Prodr. Syst. Mam., p. 87 (1811). Type *G. capensis*.

Rodent moles closely resembling *Bathyergus* externally, but with

quite small claws to both feet, the second and third toes of both fore and hind feet are about equal, and the longest.

Skull with a somewhat rounded upper profile; teeth as in *Bathyergus*, but with the upper incisors quite smooth.

This is a purely African genus; in addition to those described below, there are some three or four species known from Angola, Central and East Africa.

GEORYCHUS CAPENSIS, THE BLES MOL.

Mus capensis, PALLAS, Glires, pp. 76, 172, pl. vii. (1779).

Bathyergus capensis, SMUTS, Enum. Mam. Cap., p. 49 (1832); A. SMITH, S. Afr. Quart. Journ., ii., p. 170 (1834); WATERHOUSE, Ann. Mag. N. H. (1), viii., p. 81, pl. ii., fig. 2 (1842).

Georychus capensis, A. SMITH, Descr. Cat. S. Afr. Mus., p. 26 (1826); GRILL, Victorin Zool. Anteck. k. Vet. Akad. Handl. Stockholm, ii., p. 19 (1858) [Cape Town and Knysna]; LAYARD, Cat. Mam. S. Afr. Mus., p. 55 (1862); GRAY, Proc. Zool. Soc., p. 123 1864; P. L. SCLATER, Proc. Zool. Soc., pp. 246, 449 (1889) [white var.]; THOMAS, Ann. Mag. N. H. (6), xvi., p. 238 (1895).

Description.—General colour above a rusty brown becoming paler on the sides, and slaty grey below; the fur soft and thick, and with slaty bases throughout, except on the spots; head becoming darker, almost black; round the nostrils and mouth, round the eyes, round the ear-openings and on the top of the head a set of pure white patches; head much truncated in front; eyes very small; external ears absent; limbs short, fore feet with five small claws, hind feet also with five claws, short and broad, the sole covered with wrinkles and creases, but with no definite pads; tail very short, thick, and rounded, covered with white stiff bristles; mammae 8 in number—2 pairs pectoral, 2 pairs inguinal.

Young of about five inches are a pure slaty grey above, not rusty brown. Skull with the nasals and premaxillae, extending back about the same distance, incisors white, quite smooth; upper molars increasing in size from before backwards, the premolars being the smallest.

Dimensions (from a stuffed specimen).—Head and body 8·5; tail ·80; hind foot 1·20; from ear-opening to nose-tip 1·5; skull length 2·10, breadth 1·60; upper molars ·33.

Distribution.—The western half of the Colony extending to Namaqualand and Kimberley in the north and to Knysna in the east.

GEORYCHUS DAMARENSIS, THE DAMARALAND BLES MOL.

Bathyergus damarensis, OGILBY, Proc. Zool. Soc., p. 5 (1838).

Georychus damarensis, GRAY, Proc. Zool. Soc., p. 125 (1864); THOMAS, Ann. Mag. N. H. (6), xvi., p. 239 (1895).

Description.—Size about the same as the common Blesmol. General colour uniform reddish brown above and below with a large irregularly square white mark on the occiput and another on each side of the neck below the ears, meeting below on the throat, which is therefore a dirty white; feet reddish brown; tail short, covered with stiff reddish brown bristles. (Ogilby.)

Dimensions.—Head and body 8·25; tail ·25.

Distribution.—The type of this species, now in the British Museum, was obtained many years ago by Capt. Alexander in Damaraland; it also occurs in Angola. It is not represented in the collections of the South African Museum.

GEORYCHUS DARLINGI, DARLING'S BLES MOL.

Georychus darlingi, THOMAS, Ann. Mag. N. H. (6), xvi., p. 239 (1895); DE WINTON, Proc. Zool. Soc., p. 805, pl. xl., fig. 1 (1896).

Description.—Size small; fur close, soft, and velvety, general colour uniform drab, the bases of the fur slaty grey, below slightly paler; a large prominent triangularly shaped spot on the crown of the head; feet and tail as in *G. hottentotus*.

Skull broad and heavy, nasals short and evenly expanded, premaxillae surpassing them posteriorly and forming a suture behind them; antorbital foramen higher than broad, with a thick outer wall.

Dimensions (from a male measured in the flesh).—Head and body 5·0; tail ·47; hind foot ·86; skull length 1·12, breadth ·88; upper molars ·22.

Distribution.—The type now in the British Museum was obtained by Mr. G. A. K. Marshall, near Salisbury, and other specimens collected by Mr. Darling were received from Mazoe also in Mashonaland, at the same time; not represented in the South African Museum.

GEORYCHUS HOTTENTOTUS, THE MOLE RAT.

Bathyergus hottentotus, LESSON, Voy. Coq. Zool., i., p. 166, pl. ii. (1825).

Bathyergus caccutiens, BRANTS, Muizen, p. 37 (1827); SMUTS,

Enum. Mam. Cap., p. 49 (1832); A. SMITH, S. Afr. Quart. Journ., ii., p. 171 (1834).

Bathergus ludovigii, A. SMITH, Zool. Journ., iv., p. 439 (1829).

Georychus holosericeus, WAGNER, Schreber Säugeth. Suppl., iii., p. 373 (1843).

Georychus caecutiens, GRAY, Proc. Zool. Soc., p. 125 (1864); THOMAS, Ann. Mag. N. H. (6), xvi., p. 238 (1895).

Georychus hottentotus, GRILL, k. Vet. Akad. Handl. Stockholm, ii., p. 19 (1858) [Knysna]; NOAK, Zool. Jahrb., iv., p. 144, pl. iii., figs. 21–25 (1895) [Kalahari].

Description.—Much smaller than *G. capensis*; general colour dark slaty with a tinge of dark brown above owing to the brown tipping of the slaty fur, below the tipping is dirty white, giving a paler general aspect to the fur; no sign of white anywhere on the head, which is the same colour as the body; not entirely blind as described by Brants, but with very small eyeballs about .08 in. in diameter and a distinct slit measuring about the same length; limbs and tail as in the other species, but with the sole of the foot narrower and more slender.

Skull with the premaxillae extending further back than the nasals and forming a suture in the middle line behind; the lachrymal bone forms on either side a slight overhanging projection, rendering the skull at this point much wider than it is just behind; antorbital opening elongated and upright. The upper molars are more rounded than in *G. capensis*, and decrease in size from in front backwards, the premolar being the largest.

Dimensions (of a male in the flesh).—Head and body 5.62; tail .50; hind foot .92; skull length 1.35; breadth .97; upper molars .25.

Distribution.—This is the common Mole Rat of the eastern province of the Colony and Natal, though extending as far as Stellenbosch in the west, whence the South African Museum possesses examples; other localities are Uitenhage (Smith), Knysna (Victorin), Kalahari (Noak), Johannesburg, Grahamstown, Howick, and Durban in Natal (South African Museum).

GEORYCHUS NIMRODI, SELOUS'S MOLE RAT.

Georychus nimrodi, DE WINTON, Proc. Zool. Soc., p. 808 (1896).

Description.—About the same size as *G. hottentotus*; general colour dark drab with no white spot on the head; skull with the premaxillae not extending posteriorly beyond the nasals, so that the suture between these and the frontals is a simple bowed line; ant-orbital foramina small, with the outer wall thickened.

Dimensions (of the type, a male in the flesh).—Head and body 5·75; hind foot ·96; skull length 1·22, breadth 1·06.

Distribution.—The type together with several other examples, were all obtained by Mr. Selous, at Essex Vale, a farm near Bulawayo, and are now in the British Museum.

FAMILY PEDETIDAE.

GEN. PEDETES.

Pedetes, ILLIGER, Prodr. Syst. Mamm., p. 81 (1811). Type *P. caffer*.

Helamys, F. CUVIER, Dict. Sci. Nat., xx., p. 344 (1817). Type *P. caffer*.

Form kangaroo-like, with short fore limbs, and well-developed hind limbs, the metatarsus being especially elongated and the metatarsal bones separate from one another; there are four toes armed with hoof-like nails.

Skull short and broad with very wide and expanded nasals, ant-orbital opening very large and oval; malar bone ascending from the zygomatic arch in a horizontal plate to meet the lachrymal bone; cervical vertebrae free.

Dentition.—i. 1/1; c. 0/0; p.m. 1/1; m. 3/3=20; molars rootless, with a single deep enamel fold externally in the upper jaw, internally in the lower jaw.

This genus, the only one of the family, and containing the single species below described, is a rather anomalous one, and has no near allies, so that its position among the other rodent families has varied considerably. Mr. Alston, in his classical paper on the arrangement of Rodents (Proc. Zool. Soc., 1876, p. 61), placed it in a special sub-family of *Dipodidae*, or Jerboa rats, among the *Myomorpha*; several authors have recognised the fact that the resemblances between the Jerboas and *Pedetes* are artificial and adaptive rather than natural, and Dr. Winge, of Copenhagen, in a general revision of the Rodents,* placed the *Pedetidae* between the *Sciuridae* and the *Anomoluridae*; Mr. O. Thomas,† however, in his recently published list has transferred the family to the *Hystricomorpha*, and placed them at the commencement of the series; on the whole, most of

* Jordfundene og nulevende Gnavene fra Lagoa Santa E. Mus Lundii, iii. (1887).

† Proc. Zool. Soc. (1896), p. 1012.

the characters of the skull and teeth bear out the contention of Mr. Thomas.

PEDETES CAFFER, THE SPRING-HAAS.

Mus caffer, PALLAS, Glires, p. 87 (1778).

Yerbua capensis, FORSTER, k. Vet. Akad. Handl. Stockholm, p. 108, pl. iii. (1778).

Helamys capensis, F. CUVIER, Hist. Nat. Mam., livr. 59 (1829); LAYARD, Cat. Mamm. S. Afr. Mus., p. 55 (1862).

Pedetes caffer, A. SMITH, Descr. Cat. S. Afr. Mus., p. 26 (1826); SMUTS, Enum. Mam. Cap., p. 47 (1832).

Pedetes typicus, A. SMITH, S. Afr. Quart. Journ., ii., p. 169 (1834).

Description.—General colour tawny brown, becoming paler on the sides and almost pure white below, including a vertical stripe in front of the thighs; fur long, straight, dark brown, with a slaty tinge basally, sandy brown terminally; rhinarium not connected with the upper lip by a naked line; snout very obtuse, eye large, ears long and pointed, measuring $2\frac{1}{2}$ to 3 in., thickly clothed with hairs basally, nearly naked terminally, bearing at the base of the inner margin a little fleshy projecting lobe resembling a bat's tragus; fore limbs short, with five toes, all provided with long, curved, and pointed claws, palm of the hand with a large, rounded, naked pad at the root of the thumb, and another smaller oval one with a fringe of hairs around it at the root of the fifth digit; hind limbs much elongated, the tarsus being as long as the foot from the knee to the ankle; only four toes, the third the largest, the fifth the smallest, and the first absent, all armed with solid hoof-like nails; sole of the foot hairy to the claws; tail about as long as the head and body, covered with long hairs, sandy brown above, pale below, the terminal third black; mammae 4 in number, pectoral in position.

Dimensions (from a stuffed specimen).—Head and body 23·50; tail without terminal hairs 20·50; with 21·50; hind foot 6·50; from ear-opening to tip of nose 4·0; skull length from condyle to pre-maxillae 2·95, between perpendiculars 3·8, breadth 2·35; upper molars ·78.

Distribution.—Found throughout the drier and higher parts of South Africa extending northwards to Angola and Unyamwezi in German East Africa, but not apparently occurring in Nyassaland, Mozambique, or Natal; the South African Museum possesses

examples from the Port Elizabeth, Albany, Graaf Reinet, and Middelburg Divisions of the Colony, it is also found throughout the Orange Free State, Griqualand West, Bechuanaland, the Transvaal, Rhodesia, and German South-West Africa.

FAMILY OCTODONTIDAE.

GEN. PETROMYS.

Petromys, A. SMITH, S. Afr. Quart. Journ., i., No. 5, p. 11 (1831). Type *P. typicus*.

Compact, rounded animals with moderate rounded ears, with tails only a little shorter than the body covered with stiff hairs, which become longer towards the tip; five toes to both fore and hind limbs, the pollex, however, being short and rudimentary.

Skull very broad posteriorly, with very large antorbital openings, at the base of which is a groove for the passage of the nerve.

Dentition.—i. 1/1; c. 0/0; p.m. 1/1; m. 3/3=20; upper incisors smooth, small, and compressed; molars rooted somewhat quadrate with a single fold internal in the upper and external in the lower jaw, and with indications of smaller opposite folds external in the upper, internal in the lower jaw.

Only one species of this genus, that below described, is known.

PETROMYS TYPICUS, THE ROCK RAT, OR NOKI.

Petromys typicus, A. SMITH, S. Afr. Quart. Journ., i., No. 5, p. 11 (1831); *Id.*, *ibid.*, ii., p. 146 (1834); *Id.*, *Illustr. Zool. S. Afr. Mam.*, plates xx., xxi. (skull and anat.), (1849); WATERHOUSE, *Nat. Hist. Mam.*, ii., p. 308, pl. xvi., fig. 8, pl. xvii., fig. 1 (1848).

Description.—General shape rat-like; colour dull brownish grey, pencilled tawny and black, hinder part of the back and posterior extremities dull chestnut, all the hairs bluish grey at the base; below dull white tinged with tawny; apex of the muzzle and orbit bright chestnut, whiskers long, rigid, and black, snout projecting and truncated; ears rather small, wider than high, blackish, only moderately clothed with hair; fore limbs with four clawed toes, the first being represented by mere tubercle, palms with five rather swollen pads; claws back; hind limbs somewhat thickened, hairy above, naked below, with six pads, the three at the base of the toes large and oval, the two next small and rounded, the proximal one

much elongated but not well developed, all the toes clawed, the first short and not reaching the base of the second.

Tail a little shorter than the head and body, cylindrical, covered with scales, which, however, are concealed by the long black hairs, these are about .25 in. long towards the base, but gradually increase to about .75 in. at the tip, the extreme base of the tail is the same colour as the body, the rest of it is black.

Incisors yellowish.

Dimensions (from a specimen in alcohol).—Head and body 5.75; tail 5.30; hind foot 1.25; from ear-opening to tip of nose 1.50; length of a skin according to Smith 7.25; skull length 1.63, breadth .98; upper molars .38.

Distribution.—The Rock Rat has been found only in Namaqualand; Sir A. Smith obtained his specimens in the mountains towards the mouth of the Orange River. The South African Museum is indebted to Dr. Howard for examples of this species, obtained at Klipfontein about fifty miles inland from Port Nolloth.

GEN. THRYONOMYS.

Aulacodus, TEMMINCK, Monogr. Mam., i., p. 245 (1827) (nec Eschschricht). Type *T. swinderenianus*.

Thryonomys, FITZINGER, S. B. Akad. Wien, lvi., p. 141 (1867). Type *T. semipalmatus*.

Stout, rat-like animals, with blunt muzzles, harsh fur, and short tails sparsely covered with stiff bristles; the fore feet with a rudimentary pollex and a small fifth toe, the hind foot with only four digits, the outer (fifth) being very short.

Skull with inflated facial and small cranial divisions, the occipital and lamboidal crests are very well developed, the antorbital opening is large and has a special basal groove for the reception of the nerve.

Dentition.—i. 1/1; c. 0/0; p.m. 1/1; m. 3/3=20; incisors very broad, the upper ones with three strong longitudinal grooves; the lower ones smooth; molars rooted, with, in the upper jaw two external and one internal enamel folds; in the lower jaw one external and two internal folds.

The use of the old and more familiar name for this genus, *Aulacodus*, has recently been shown by Thomas to be inadmissible, as it was previously used by Eschschricht for a genus of *Coleoptera*.

Four species from other parts of Africa are recognised in addition to the one below described.

THRYONOMYS SWINDERENIANUS, THE CANE RAT.

Aulacodus swinderianus, TEMMINCK, Monogr. Mam., i., pp. 245, 248, pl. xxv. [juv.] (1827); WATERHOUSE, Nat. Hist. Mam., ii., p. 356, pl. xvi., fig. 2 (1848); LAYARD, Cat. Mam. S. Afr. Mus., p. 50 (1862).

Aulacodus swinderenianus, THOMAS, Ann. Mag. N. H. (6), xiii., p. 202 (1894).

Description.—General colour speckled yellow and brown, below paler, body covered everywhere with coarse bristles, no under-fur, the bristles are pale brown for the greater part of their length, with subterminal black and terminal yellow portions, they are flattened and grooved on the upper surface; chin and upper lip dirty white; ears short, broad and rounded, almost concealed among the bristles, covered with a few dark hairs; limbs rather short, with four clawed toes to each, those of the fore limb being the shorter, pollex very small with a flat nail, hallux absent; tail less than half the length of the head and body, somewhat rat-like, covered with short stiff hairs, dark above, light below, the scaly skin being hardly hidden; mammae 6 in number, pectoral in position.

Dimensions (from a stuffed specimen).—Head and body 19·0; tail 7·0, hind foot 2·80; from ear-opening to nose-tip 3·55; skull length 3·75, breadth 2·62; upper molars ·75; weight of a male from 9 to 10 lbs.

Distribution.—The Cane Rat was originally described by Temminck from a young specimen of which the history was unknown; subsequently it was obtained from Sierra Leone and Natal, and it is now known as well from French Congo, Angola, German East Africa, Nyassaland, and Mozambique. Within our limits it is found only in the eastern Transvaal, Zululand, Natal, and the eastern portion of the Colony as far as Grahamstown.

FAMILY HYSTRICIDAE.

GEN. HYSTRIX.

Hystrix, LINNAEUS, Syst. Nat., 12th ed., i., p. 75 (1766).

Porcupines with short tails, smooth soles, and furrowed upper lips; the skull is ovate and greatly inflated with air sinus, the nasal cavity being specially large; the clavicles are imperfect.

Dentition.—i. 1/1 ; c. 0/0 ; p.m. 1/1 ; m. 3/3=20 ; molars semi-rooted, those of the upper jaw with one internal and three or four external enamel folds, this arrangement being reversed in the lower jaw ; the folds soon become with wear simple loops of enamel inside the margin of the tooth.

Only one member of this genus occurs within our limits, the other species are spread over Southern Europe, Asia, and Northern Africa.

HYSTRIX AFRICAE-AUSTRALIS, THE SOUTH AFRICAN PORCUPINE.

Hystrix cristata, apud SMUTS, Enum. Mam. Cap., p. 50 (1832) ; A. SMITH, S. Afr. Quart. Journ., ii., p. 171 (1834) ; LAYARD, Cat. Mam. S. Afr. Mus., p. 55 (1862) (nec Linnaeus).

Hystrix africae-australis, PETERS, Reise Mozamb. Säugeth., p. 170, pl. xxxii., figs. 6, 7 [skull] (1852).

Hystrix capensis, GRILL, k. Vet. Akad. Handl. Stockholm, ii., p. 19 (1858).

Description.—General colour dark brown, almost black, the fore part of the body and limbs covered with long coarse bristles, which are not stiff and sharp ; along the nape of the neck and the middle of the front part of the back the bristles are very long, up to 16 inches, and stand up at the will of the animal and form a crest ; towards the hinder part of the back and the haunches the bristles become stronger, stouter, and sharp-pointed, forming the true quills, these are banded brown and white, the brown bands being the broader and the tips white ; all the quills are longitudinally striated.

Head much rounded, the rhinarium somewhat hairy and connected with the upper lip by a bare line, eyes small and black, ears short, broad, and rounded, thick with a few fine hairs ; sometimes a white transverse mark on the chest ; feet covered with bristles nearly concealing the toes and claws, which are four in number on the fore feet (the pollex being rudimentary) and five on the hind ; tail short, entirely surrounded and concealed by the spines, the point with a tuft of hollow membranous cylinders, which in the young are pointed and spiny, but broken off in the older animals.

The differences between this species and that of Southern Europe and Northern Africa (*H. cristata*) are chiefly cranial, and were first noticed by Peters.

In the South African species the nasal bones reach backwards as far as the anterior border of the orbit, while in *H. cristata* they

extend much further, as far as the posterior root of the zygoma. In consequence of this the frontal bones in *H. africæ-australis* are much longer, being more than half the length of the nasals and twice as long as their distance from the occipital crest; in *H. cristata*, on the other hand, they are less than half the length of the nasals and just about as long as their distance from the occipital crests.

Dimensions (from a stuffed specimen).—Head and body 26·0; tail about 5·0; hind foot 4·50; from ear-opening to nose-tip 6·50; skull length 6·0, breadth 3·40; upper molars 1·5.

Distribution.—This porcupine is found all over South Africa, extending northwards as far as French Congo on the west and German East Africa on the east; within our limits it appears to be very widely spread, being recorded from nearly all the districts of the Colony, from German South-West Africa, Rhodesia, the Transvaal, Orange Free State, and Natal. It is not uncommon on the slopes of Table Mountain.

FAMILY LEPORIDÆ.

GEN. LEPUS.

Lepus, LINNÆUS, Syst. Nat., 12th ed., i., p. 77 (1766).

Rodents with long ears and hind legs and short, bushy, recurved tails; limbs with five toes to the fore and four to the hind feet, soles very thickly haired.

Skull with the bony palate reduced to a mere bridge between the molars, with no true alisphenoid canal, and with a very peculiarly shaped postorbital process; this where it springs from the frontals is quite narrow but afterwards expands to form a flattened bar margining the upper rim of the orbit.

Dentition.—i. 2/1 (at birth 3/1); c. 0/0; p.m. 3/2; m. 3/3 = 28; the outer upper incisors are soon lost, the next pair are very small and placed directly behind the large middle pair which are longitudinally grooved; grinding teeth rootless with transverse enamel folds dividing them into lobes.

The genus contains the hares and rabbits, of which there are a large number of species distributed all over the world, with the exception of the Australian region and Madagascar.

LEPUS CAPENSIS, THE CAPE HARE.

Lepus capensis, LINNÆUS, Syst. Nat., 12th ed., i., p. 76 (1766); SMUTS, Enum. Mam. Cap., p. 51 (1832); A. SMITH, S. Afr. Quart.

Journ., ii., p. 172 (1834); WATERHOUSE, Nat. Hist. Mam., ii., p. 95 (1848); GRILL, k. Vet. Akad. Handl. Stockholm, ii., p. 19 (1858); LAYARD, Cat. Mam. S. Afr. Mus., p. 56 (1862); NOAK, Zool. Jahrb. iv., p. 159 (1889) [Kalahari].

Lepus arenarius, IS. GEOFFROY, Dict. Class. d'Hist. Nat., ix., p. 383 (1825) [Port Natal].

Lepus ochropus, WAGNER, Schreb. Säugeth. Suppl., iv., p. 96 (1844).

Description.—General colour speckled black and yellowish brown, the hairs somewhat coarser than that of the other species, woolly and pale slate colour at the base, the tips yellowish brown with a sub-terminal band of black; sides paler somewhat rufous, below white tinged with rufous; chin pale yellowish, chest pale brownish, outside of the limbs with a rufous tinge, round the eye a pale almost white ring; ears moderate, about $4\frac{1}{2}$ in. in length from the point of coalescence of the margins to the tip, almost naked anteriorly, posteriorly with the inner half thickly clothed with short almost black hairs, the tips and upper margins quite black; nape and occiput grey not rufous; feet clothed with comparatively short hairs so that the claws are hardly hidden; tail rather long, jet-black above pure white below.

Dimensions (from a stuffed specimen).—Head and body 23·0; tail 4·0; hind foot 4·50; from ear to tip of nose 4·5; skull length 3·42, breadth 1·55; upper molars ·54.

Distribution.—The Cape Hare is found almost everywhere throughout the Colony, and extends northwards through Angola to French Congo on the West Coast, and through Natal, Mozambique, and German East Africa to Kilimanjaro on the East Coast; it has been noticed by Kirby in the Eastern Transvaal, but hitherto its occurrence in Rhodesia and Nyassaland has not been authenticated. It is common in the immediate neighbourhood of Cape Town, whence come the examples in the South African Museum.

LEPUS SAXATILIS, THE ROCK HARE.

Lepus saxatilis, F. CUVIER, Dict. Sci. Nat., xxvi., p. 309 (1823); A. SMITH, S. Afr. Quart. Journ., ii., p. 173 (1834); SMUTS, Enum. Mam. Cap., p. 52 (1832); WATERHOUSE, Nat. Hist. Mam., ii., p. 92, pl. i., fig. 1 (1848); LAYARD, Cat. Mam. S. Afr. Mus., p. 56 (1862).

Lepus rufinucha, A. SMITH, Zool. Journ., iv., p. 440 (1829).

Lepus fumigatus, WAGNER, Schreb. Säugeth. Suppl., iv., p. 98 (1844).

Description.—Considerably larger than the other two species; general colour speckled black and yellowish brown, but with no trace of the rufous; below, including the chin, white with a pale yellowish tinge, chest like the back, no black mark on the cheek, a white spot often present on the forehead; ears very long from the confluence of the margins about $5\frac{1}{4}$ in., from the extreme base about $6\frac{1}{2}$ in., nearly naked anteriorly; the inner half of the posterior surface thickly covered with short hair and along the margin of the tip a fringe of black; a rufous patch on the nape and occiput as in *L. crassicaudatus*; limbs much longer than those of the other species; claws concealed by the long hairs; tail long like that of *L. capensis*, white with a black streak above.

Dimensions (from a stuffed specimen).—Head and body 26·0; tail about 4·0; hind foot 5·75; from ear to tip of nose 6·0; skull length 4·15, breadth 1·82; upper molars ·66.

Distribution.—This Hare appears to be confined to the higher hills throughout South Africa as far north as Ovampoland and Rhodesia; it does not seem to be recorded from the countries beyond our limits, though it is noted by Peters from the neighbourhood of Tette on the Zambesi.

LEPUS CRASSICAUDATUS, THE RED HARE.

Lepus crassicaudatus, IS. GEOFFROY, Mag. Zool., pl. xix. (1832); WATERHOUSE, Nat. Hist. Mam., ii., p. 99 (1848); LAYARD, Cat. Mam. S. Afr., p. 57 (1862).

Lepus rupestris, A. SMITH, S. Afr. Quart. Journ., ii., p. 174 (1834).

Lepus melanurus, RUEPPELL, Mus. Senckenbergianum, iii., p. 137 (1842).

Description.—General colour speckled black and yellowish brown much as in *L. capensis*, but perhaps a little lighter, becoming rufous-white below; fur softer than in *L. capensis*; chin white, separated on either side from the grey of the cheeks by a black line running back from the angle of the mouth to below the ear; a whitish ring round the eye; ears moderate rounded at the extremities, about $4\frac{1}{2}$ in. in length, nearly naked anteriorly, posteriorly a band along the inner margin covered with very short speckly black and yellow hairs; a pure rufous patch on the occiput and nape of the neck, the rufous extending up the base of the ears; legs and feet short and rufous-brown; tail thick and bushy, pale brown above and below, with no white or black as in the other species.

Dimensions.—Head and body 20·0; tail 3·50; hind foot 5·0; from ear-opening to tip of nose 4·5.

Distribution.—This Hare is also found only in the hills at considerable elevations; it appears to be fairly well distributed all over the Colony, Natal, the Orange Free State and Southern Transvaal; it has recently been obtained on the Nyika plateau at an elevation of 7,000 ft. in Nyassaland. An example in the South African Museum is from Beaufort West.

ADDENDA.

While the above was passing through the press the South African Museum received from Mr. W. Francis, of Inhambane, in Portuguese South-East Africa, examples of the large Gambian Pouched Rat (*Cricetomys gambianus*), which must accordingly be added to the above list. Peters also notes its occurrence near Inhambane. Its position should be just after *Mus* on page 214.

On page 203 the dimensions of *Malacothrix pentonyx* were accidentally omitted; they are as follows, taken from a dismounted skin, the type of the species: head and body 2·75; tail 2·10; hind foot ·65; ear to nose-tip 1·1; skull length ·91, breadth ·5, upper cheek teeth ·19.

VII.—*Fifth Contribution to the South African Coleopterous Fauna.*—By L. PÉRINGUEY, *Assistant Director*.*

DESCRIPTION OF NEW SPECIES OF COLEOPTERA, CHIEFLY IN THE COLLECTION OF THE SOUTH AFRICAN MUSEUM. (Plates VI., VII.)

FAMILY SCYDMÆNIDÆ.

ONEILA, nov. gen.

Scydmæno valde affinis, præcipue differt articulis 7° et 8° in mare præsertim valde ampliatis, nonnunquam deformibus; caput quadratum, in collum distinctum productum; palporum maxillarum articulus penultimus longus, fusiformis, apice truncatus, ultimus distincte subulatus; prothorax sub-elongatus, postice attenuatus; elytra ovalia; pedes longi, graciles, femoribus valde clavatis.

ONEILA HETEROCERA,

Plate VII, fig. 15 ♀, 16 ♂.

Caput piceum, nitidum, longe pilosum; antennæ articulis sex primis rufescentibus, reliquis dilutioribus, duobus basilibus in mare sat validis, æqualibus, 3–6 monilibus, confertis, præcedentibus nonnihil angustioribus et dimidio brevioribus, 7° quadrato, introrsum producto, profunde excavato, 8° maximo, præcedenti duplo longiore et latiore, parte interna profunde lateque excavata, marginibus cavæ in processu auriculato productis, 9–10 tranverse quadratis, hoc illo nonnihil longiore, ultimo penultimis duobus vix longiore, basi truncato, elongato-ovato, apice acuminato; prothorax latitudine fere duplo longior, convexus, ad basim lateraliter attenuatus, supra convexus, intra basim bi-foveolatus, piceus, nitidus, setis rigidis

* The first four Contributions are published in the Transactions of the South African Philosophical Society, 1885–1892.

nigrescentibus dense vestitus; elytra ovalia, rufo-castanea, pilis longis griseis decumbentibus vestita; pedes sub-testacei, dense pubescentes, tarsi flavi. Long. 1.70 mm.; lat. 0.7 mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

ONEILA ENONENSIS,

Plate VII, fig. 17.

Præcedenti simillima, structura articulorum antennarum præcipue differt; caput nigrum, nitidum, longe pilosum; antennæ in mare articulis basalibus duobus sub-validis, æqualibus, 3-6 monilibus, confertis, præcedentibus dimidio brevioribus, 7° conu simili, abrupte truncato, basi apice quarto angustiore, introrsum leviter producto, haud excavato, 8° maximo, præcedenti duplo longior, isto basi æquali, sed apice duplo latior, introrsum a medio apice valde producto atque interne anguste sed profunde excavato, marginibus excavationis simplicibus, 9-10 transverse quadratis, hoc nonnihil angustiore, ultimo penultimis duobus vix brevior, basi truncato, elongato-ovato, apice acuminato; feminae articulis 1-6 ut in mare, 7° sub-conico, præcedenti basi æquali, apice fere quarto latior, 8° sexto duplo latiore, inferne angulato, 9-10 transversis, præcedentibus nonnihil angustioribus, ultimo basi truncato, elongato-ovato, apice acuminato, penultimis duobus vix brevior; prothorax, elytra, pedes, corpus subtus ut in *O. heterocera*. Long. 1.67 mm.; lat. 0.72 mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

FAMILY CLERIDÆ.

GEN. PHILOCALUS, Klug.

PHILOCALUS RHODESIANUS.

Niger, fusco-villosus, prothoracis basi, elytrorum parte antica pectoreque sanguineis; caput sat magnum, parce fusco-villosum, rugosum, antice bi-impressum, labro brunneo, palpis piceis; antennæ pubescentes, articulis ultimis brunneo-infuscatiss; prothorax apice basique truncatus, cylindricus, intra basim late profundeque constrictus, scrobiculatus, longe flavescens-villosus plagisque rotundatis duabus parvis flavo-pubescentibus in medio notatus, niger, sub-nitidus, parte constricta rubra; elytra parallela, cylindrica, humeris nonnihil rotundatis elevatisque, postice conjunctim rotundata, a basi ad medium seriatim foveolata, deinde ad apicem late punctata, apice ipso vix punctulato, a basi medio sanguinea, nitida, postice nigra, fascia flava transversa pone medium posita ornata; subtus parce

fusco-villosus, sanguineus, abdomine nigro; pedes nigri, punctulati, griseo-villosi. Long. 14 mm.; lat. 4 mm.

Hab. Zambesia (Buluwayo). F. C. Selous.

PHILOCALUS EMERITUS.

Caput nigrum, longe fusco-villosum, confertim rugoso-punctatum, fere scrobiculatum; antennæ nigrae, pubescentes; prothorax antice capite non angustior, ad quartam partem contractus, tum rotundatus atque intra basim conspicue coarctatus, supra convexus, parte antica longitudinaliter strigosa, disco distincte scrobiculato, longe villosus, obscure sanguineus, margine apicali late fusco-nigra; elytra fere cylindrica, pone medium perparum ampliata, apice rotundata, a basi ultra medium sat confertim foveolata, postice foveis elongatis apice evanescentibus, a basi ad quartam partem obscure sanguinea, deinde nigra, macula parva laterali intra basim et medium posita, fascia transversali suturae approximata, post medium sita, flavis, fasciaeque apicali e pilis albidis formata ornata; corpus subtus griseo-villosum, pectore obscure rufo; abdomine brunneo-fusco; pedes nigri, griseo-villosi. Long. 12 mm.; lat. $3\frac{3}{4}$ mm.

Probably allied to *P. formosus*, Boh.

Hab. Transvaal (Leydenburg). T. Ayres.

The sculpture of the prothorax is quite similar to that of some hymenopterous insects of the genus *Mutilla*.

FAMILY PTINIDÆ.

GEN. PTINUS, Linn.

PTINUS LEPIDUS.

Fusco-brunneus, antennis pedibusque brunneo-ferrugineis; caput dense hirsutum; antennæ corpore dimidio longioribus, articulo tertio primo vix brevior, cæteris, etiam articulo ultimo, longitudine adæquantibus, sat graciles, articulo ultimo haud incrassato, apice vix acuminato, breviter setulosæ, articulis tribus basalibus sparse albidosquamosis; prothorax sub-cylindricus, intra basim coarctatus, sat fortiter punctatus, pilis longis nigris, erectis, fasciculatis, in cristis duabus utrinque dispositis squamisque nonnullis albidis intra basim sparsis, dense obtectus; scutellum albo-squamosum; elytra basi angulis rectis, parallela, apice conjunctim rotundata, convexa, prothorace duplo latiora et quaduplo longiora, profunde punctato-striata, interstitiis angustis, alternis longe denseque nigro-pilosis, basi rufo-brunnea, late zonata, deinde apice obscure brunnea, fasciis transversis duabus e squamis albidis formata, prima basali, lata, altera

angusta, longe pone medium posita plagaque breve apicali, communi, ornata. Long. 3 mm.; lat. $1\frac{1}{4}$ mm.

Hab. Cape Colony (Stellenbosch).

Belongs to the same group as *P. pulchellus*, &c.

PTINUS HILARIS.

Brunneo-ferrugineus, antennis pedibusque dilutioribus, pube flavescente vestitus; caput longe pilosum; antennæ corpore nonnihil breviores, articulo primo valido, tertio secundo perparum longiore, cæteris elongatis, æqualibus, ultimo præcedenti nonnihil longiore, sub-fusiformi; prothorax antice fere cylindricus, a medio basi valde coarctatus, in medio disci atque ad latera tenuissime canaliculatus, pilis decumbentibus flavescens sparse obtectus cristisque medianis rotundatis quatuor parum elevatis, e pilis densioribus formatis, munitus; scutellum infuscatum; elytra ovalia, profunde punctata, interstitiis angustis, sub-acutis, breviter setulosis; setis seriatis, confertis; pedes dense pubescentes. Long. 3 mm.; lat. $1\frac{1}{2}$ mm.

Hab. Cape Colony (Stellenbosch).

The general appearance, owing to the ovate elytra, approximates, among the South African species, that of *P. affinis*, Pér., but the shape of the five basal joints of the antennæ and also the disposition of the fasciculated hairs on the elytra are very different.

GEN. MEZIUM, Curt.

MEZIUM NOTIALE.

Brunneo-rufum; caput dense flavo pubescens; antennæ pubescentes, fere medium corporis attingentes, articulis, ultimis duobus exceptis, æqualibus, squamoso pubescentibus, apice breviter setulosis; prothorax pube flava lanuginosa dense obsitus, distincte longitudinaliter tri-canaliculatus, interstitiis rotundatis, setulosis, elevatis, postice in tuberculum sat validum, rotundatum, a parte anteriori haud disjunctum productis; elytra globosa, acute costata, costis sparse fulvo squamosis, basi conspicue squamoso fasciculatis, setis erectis nonnullis seriatis, obsitis; pedes tarsisque pube squamosa dense obtecti; pectore abdomineque setis squamosis, decumbentibus, confertis, obtectis. Long 2 mm.; lat. $1\frac{1}{2}$ mm.

Hab. Cape Colony (exact locality unknown).

MEZIUM NATALENSE,

Plate VII., fig. 14, 14a.

Brunneo-rufum, nitidum; caput dense flavo-pubescent; antennæ pubescentes, graciles, ultra medium corporis attingentes, articulis fere æqualibus, apice vix setulosis; prothorax indumento flavescente, parce setuloso, dense obtectus, utrinque distincte canaliculatus, margine laterali acuta, ad medium aculeata, dein basi attenuata, recta, disco callo valde elevato postice sulco lato a basi ultra medium diviso, margine antica sulco angustiori circulatim divisa; elytra globosa, sat acute costata, costis basi fasciculatis, setis erectis confertis seriatim obsitis, interstitiis distincte punctatis; pedes tarsique pube squamosa dense obtecti, illis apice setulosis; subtus pectore abdomineque setis squamosis decumbentibus confertis, obtectis. Long. $2-2\frac{1}{4}$ mm.; lat. $1\frac{1}{2}-1\frac{3}{4}$ mm.

Hab. Natal (Estecourt). A. E. Haviland.

DAMARUS, gen. nov.

Mezio veresimilis ab illo differt antennis validioribus, 10-articulatis, articulis setis rigidis, crassis coronatis, articulo basali valido, oblique truncato, extrorsum deflexo, apice valde oblique truncato, secundo primo multo brevior, in latera ejusdem externe sito, 3^a-9^a obconicis, ultimo duobus præcedentibus simul sumptis longitudine nonnihil brevior, haud latior, apice acute acuminato, haud setoso atque mesosterno latior, rotundato.

The last joint of the antennæ shows in the female a very faint trace of suture at about the median part, where the tenth and eleventh joints have become fused.

DAMARUS SINGULARIS,

Plate VII., fig. 18.

Totus niger, glaber, capite, prothorace, pectore abdominisque segmentis basalibus tribus indumento cretaceo, nitido obtecto; caput supra leve, vertice profunde sparsim punctato, punctis profundis setam rigidam, validam ferentibus; prothorax transversus, inermis, lateraliter angulatus, in dorso distincte bi-callosus, ad latera medioque postice leviter sulcatus; scutellum glabrum; elytra globosa, nitida, sutura costisque acute carinatis tribus, duabus discoidalibus basi hamatis, utrinque prædita, interstitiis latis; pedes tarsique crassi,

glabri, his setis rigidis munitis, tibiis anticis interne valide rigide setosis; sterno abdominisque segmentibus basalibus tribus profunde et sparse punctatis, punctis profundis setam rigidam validam ferentibus. Long. $2\frac{1}{2}$ –3 mm.; lat. $1\frac{3}{4}$ – $1\frac{4}{5}$ mm.

Mas a femina differt antennarum articulo basali fere duplo crassiore.

Hab. Damaraland (? Walfish Bay).

GEN. DIPLOCOTIDUS.

Palpi fere ut in *Ptino*; caput antice verticale, vertice valde elevato; oculi prominentes; antennæ longitudine corporis, articulo basali valido, crasso, sub-flexo, apice oblique truncato, secundo primo duplo brevior, in latero ejusdem sito, 3–5 elongato-conicis, latitudine apicali fere tertio longioribus, 6–10 sub-turbinatis, introrsum linearibus, extrorsum apice angulatim productis, articulo ultimo præcedenti tertio longior, conico, a tertia parte attenuato, apice acuminato; prothorax bi-partitus; scutellum oblitteratum; elytra ovata; coxæ validissime productæ, globosæ, anterioribus sat approximatis, intermediis distantibus, posticis transversim late dissepitis; abdominis segmentum basale angustissimum, vix perspicuum; pedes elongati, sat crassi, unguibus brevibus.

The general facies is not unlike some species of *Ptinus*, but it is easily differentiated by the highly raised frontal part of the head supporting the antennal tubercles, the very great development of the coxæ, and the reduction of the basal segment of the abdomen. It resembles very much *Diplocotes*, an Australian genus, and might prove to be identical in spite of the difference in the shape of the last joint of antennæ and of the prothorax, but the coxæ are much more broadly separated longitudinally, the posterior ones being almost contiguous to the fold of the elytra.

DIPLOCOTIDUS FORMICOLA,

Plate VII., fig. 13, 13a.

Niger, nitidus, pedibus antennisque nigro-rufescentibus, his apice dilutioribus; caput crebre punctato-foveatum, processu transverso, carinato, in fronte munitum, apice dente valido breve inter antennas armatum; antennæ articulis quinque basalibus valde rugosis, nitidis, minus setulosis, reliquis setis albedo-cinereis dense vestitis; prothorax bi-partitus, parte antica valde elevata, alte quadri-tuberculata,

tuberculis sulco profundo, in medio latiore, divisus; parte postica antica angustiore, ab ea excavatione transversa divisa, a medio basi profunde canaliculata, lateribus cavæ antice tuberculo, acuto instructis, crebre punctato-foveatus, squamis albidis nonnullis, in parte antica rarioribus, obsitus; elytra ovalia, pone basim nonnihil gibbosa, apice conjunctim rotundata, seriatim profunde punctata, punctis brevissime albo-setiferis; subtus grosse profundeque punctatus, abdominis, lateribus densius flavescente pilosis. Long. 2-2 $\frac{1}{4}$ mm.; lat. 1 $\frac{1}{8}$ mm.

Found in the nest of the ant *Acantholepis capensis*, Mayr.

Hab. Cape Colony (Prince Albert), W. F. Purcell.

FAMILY TENEBRIONIDÆ.

TRIBE ADESMIINI.

GEN. ADESMIA, Fisch.

ADESMIA SIMPLEX.

Plate VI., fig. 1.

Ovata, nigra, opaca; caput depressum, leve; prothorax basi longitudine duplo latior, apice angustior, lateribus fere rectis, supra parum convexus vageque punctulatus; elytra basi latitudine prothoracis aequalia, lateribus ovato ampliatis apiceque acuminatis, prothorace haud triplo longiora, supra convexa, apice declivia, tuberculis conicis, depressis granulisque crebre obsita; pedes modice elongati, rugosuli. Long. 15 mm.; lat. 9 mm.

The facies of this species is unlike that of the South African species of the genus *Adesmia*, and its nearest ally is *A. aculeata*. It is more regularly ovate, and covered with tubercles depressed but sharp, directed backwards and very closely set; in the basal part these tubercles are somewhat obliterated, and for about two-thirds of the length there are minute granules between them.

Hab. Cape Colony (Garies, Little Namaqualand). Captured by Mr. M. Schlechter.

ADESMIA (ONYMACHRIS) GARIESA.

Elongato-ovata, nigra, opaca; caput in medio depressum, supra oculos acute carinatum, fere leve; prothorax basi longitudine haud

sensim latior apiceque vix angustior, lateribus leviter rotundatis, pone oculos acute lobatis, margine apicali albido-ciliate, supra in medio leviter convexus, lateribus sub-declivis, vage punctulatus; elytra basi thorace haud latiora, lateribus rotundato ampliatis et versus apicem acuminatis, medio thorace duplo latiora et fere quinto longiora, supra convexa, apice declivia, carinis dorsalibus tribus margineque laterali serratis in singulo instructis, interstitiis verrucis acutis sparsis una serie dispositis insculptis, sutura epipleuræque carinata; pedes tenues, longissimi, femoribus subtus canaliculatis serratisque. Long. 18 mm.; lat. 10 mm.

Allied to *A. boschimana*, and intermediate in shape between this species and *A. paiva*, Haag-Rut. It differs from *A. boschimana* in the elytra being a little more amplified and not quite as elongated, the dorsal carinæ are narrower and serrulate instead of being smooth, and the intervals have a median row of sharp, not closely set granules, instead of being very rugose and transversely plicate.

Hab. Cape Colony (Little Namaqualand). Captured by Mr. G. Alston.

ADESMIA SCUTULATA,

Plate VI., fig. 2.

Nigra, indumento terreno oblecta; caput rugose scrobiculatum, pube flavescente vestitum; prothorax longitudine latitudine æqualis, lateribus ab apice usque ad tertiam partem modice ampliatis, deinde fere rectis, margine antica fimbriata, supra oculos profunde incisa, disco rude scrobiculatus, modice convexus, lateribus dehiscentibus; elytra antice prothoracis basi haud latiora, lateribus ab humeros recte ampliatis, a medio ad apicem aculeatis, medio prothoracis basi duplo latiora, supra plana, postice declivia, costa dorsali tuberculata præter marginem lateralem acute carinata sub-undulataque in singulo instructa, interstitiis verrucis nitidis adspersis; epipleura rude scrobiculata; pedes modice elongati; antennæ breves, crassiusculæ. Long. 12 mm.; lat. 7 mm.

This species is easily distinguished by the lozenge shape of the elytra, the suture is raised and sparsely verrucose, the intervals have a few irregular rounded, smooth tubercles scattered about, the dorsal ridge is placed nearer to the outer margin than to the suture and the outer margin itself is sharp but somewhat wavy.

Hab. Zambesia (Victoria Falls, Salisbury, Enkeldoorn, Buluwayo). (Dr. Bradshaw; G. A. K. Marshall; J. ffolliot Darling; Dr. Kolbe.)

GEN. STENOCARA, Sol.

STENOCARA NAMAQUA.

Nigra, capite prothoraceque opacis, elytris nitidis, antennis, palpis pedibusque rufescentibus; caput vix punctatum; prothorax longitudine duplo latior, apice basi fere dimidio angustior, lateribus rectis margine apicali angulata, supra parum convexus, fere levis, medio vage arcuatim impressus; elytra valde rotundata, medio thoracis basi duplo latiora, apice abrupte declivia et acuminata, profunde scrobiculato-rugosa, sutura sub-levi, elevata costisque sub-tuberculis duabus utrinque prædita, margine laterali e tuberculis rugatis, bi-seriatis formata, epipleura lata, profunde scrobiculata; antennæ graciles; pedes elongati, gracilimi. Long. 12 mm.; lat 7 mm.

This species as well as the following one are sufficiently distinguishable from the other South African species owing to the rotund shape of the elytra from a short distance from the base, and the abrupt posterior declivity; the legs are also very slender, but not, however, quite as filiform as in *P. gracilipes*, Sol. The two dorsal, tuberculated, nearly serrate, dorsal ridges in the elytra are very well defined, and the intervals are filled with a double series of irregular, scrobiculate, broad punctures the median wall of which is somewhat granulose.

Hab. Cape Colony (Namaqualand). L. Péringuey.

STENOCARA PLACITA.

Nigra, nitida, indumento albido nonnunquam vestita, antennis pedibusque sub-rufo piceis; caput crebre punctulatum, antice inter antennis profunde impressum; prothorax longitudine magis quam duplo latior, lateribus modice rotundatis, margine apicis angulata, basi sub-sinuatus, supra in medio convexus, ad latera deplanatus, profunde punctatus, intra basim transverse impressus; elytra rotundata, convexa, apice valde declivia, et acuminata, in medio thoracis latitudine maxima fere duplo latiora, tuberculis conicis seriatis confertim instructis obsita, epipleura lata, verrucosula; pedes graciles, elongati. Long. 11 mm.; lat. 7 mm.

In shape this species approximates *S. namaqua*, but the head and prothorax are punctured instead of being smooth, the sides of the prothorax are a little amplified in the middle, and the outer margins depressed, whereas they are straight in *S. namaqua*, and the elytra instead of having two tuberculose ridges on each side are

covered with very closely set sharp tubercles arranged in numerous series.

Hab. Cape Colony (Carnarvon). E. G. Alston.

TRIBE TENTYRINI.

GEN. EULEANTUS, Haag-Rut.

EULEANTUS ÆQUALIPENNIS,

Plate VI., fig. 3.

Niger, opacus, fere glaber, palpis, antennis pedibusque sub-rufescentibus; caput confertim longe plicatum, ante oculos utrinque alte carinatum, antice profunde bi-impressum; prothorax antice modice sub-arcuatus, angulis acutis, lateribus sub-rotundatis, ad basim sinuatis, basi truncata, apice quarto latiore, angulis acutis, supra convexus, plicis longitudinalibus elevatis crebre obsitus; elytra basi carinata, humeris nullis, prothoracis basi paulum latiora, a basi longe post medium breviter ampliata, apice modice attenuata, post medium prothoracis latitudine maxima dimidio latiora, supra deplanata, postice abrupte declivia, sutura sub-elevata, impressioneque juxta suturali, brevi, notata, margine laterali nulla, punctis confluentibus ad laterum elongatis crebre obsita; pedes modice elongati, breviter pubescentes. Long. 7 mm.; lat. 3 mm.

Hab. Damaraland (Walfish Bay). C. Wilmer.

Closely allied to *E. (?) humeralis*, Haag, but the elytra have not the deep, conspicuous broad sutural depression, and are a little more amplified laterally past the median part.

TRIBE CRYPTOCHILINI.

GEN. CRYPTOCHILE, Latr.

CRYPTOCHILE ECHINATA.

Nigra, indumento griseo, supra terreno, dense vestita; caput rugosulum, longitudinaliter plicatum; prothorax latitudine dimidio latior, margine antica in medio recurva, leviter emarginata, lateribus apice poneque medium spina valida armatis, disco plicis interruptis crebre obsito; elytra prothorace basi parum latiora, pone humeros modice ampliata, ad medium prothorace minus duplo latiora, lateribus

rectis, tomento griseo-umbrino maculisque tribus, basali elongata, brunneo-velutinis, seriatis, prope suturam positis ornatis, supra convexa, postice declivia, tuberculis validis conicis tri-seriatis costas distinctas formantibus in singulo prædita, costa juxta suturali quadri-tuberculata, cæteris e tuberculis numerosis confertis formatis, interstitiis granulis acutis obsitis, sutura utrinque serrulata; epipleura pedesque crebre granulata. Long. 12–14 mm; lat. $7\frac{1}{2}$ –9 mm.

As massive as *C. spinosa*, Pér., but a little less parallel; the spines on the elytra are not so long, and those on the juxta-sutural costa are less numerous.

Hab. Cape Colony (Namaqualand). M. Schlechter.

CRYPTOCHILE SERRATA.

Præcedenti affinis; differt prothorace antice magis attenuato, lateribus basi apiceque in spinam validam productis, elytris brevioribus atque at latera latioribus, costa juxta suturali tri-tuberculata tuberculisque validioribus. Long. 10–12 mm.; lat. $7\frac{1}{2}$ – $9\frac{1}{2}$ mm.

The general facies of this species differs from that of the preceding species owing to the elytra being a little shorter and a little more ampliate laterally; the indumentum is more greyish on the upper part, the three velvety brown patches at the base and in the median and post-median part of the second interval are similar, but the juxta-sutural costa has only three distant tubercles instead of four; * the anterior part of the prothorax is also more attenuated and the second lateral spine forms the outer basal angle instead of being situated a little behind the median part.

Hab. Cape Colony (Namaqualand). M. Schlechter.

GEN. PACHYNOTELUS, Haag-Rut.

PACHYNOTELUS HAAGI,

Plate VI., fig. 4.

Niger, opacus, indumento albido, supra flavo, dense tectus; caput rugosum, breviter setulosum; prothorax antice posticeque truncatus, latitudine maxima haud dimidio brevior, lateribus fere rectis, supra convexus, granulis minutis dense obsitus vittisque latis pubescentibus tribus ornatis; elytra basi latitudine thoracis baseos ubique

* This number does not include one or two smaller tubercles in the posterior declivity, which are present in both species.

applicata, ab humeros longe post medium ampliata, deinde sensim acuminata, post medium prothorace dimidio latiora, supra plana, postice abrupte declivia, dense albido-flavescente, squamosa, margine laterum, vitta juxta suturali vittisque duabus pone medium cohærentibus et deinde in vittam singulam continuatis denudatis granulosisque in singulo ornata; pedes squamosi, tibiis tarsisque anticis exceptis longe pilosis. Long. 8 mm.; lat. $4\frac{1}{2}$ mm.

Shape and size of *P. albonotatus*, but whereas in *P. haagi* there are three denuded granulose lines, besides the outer margin on each side of the elytra, there are four besides the suture and the margin in the first-named species, and these lines are also setulose.

Hab. Cape Colony (Namaqualand). G. Alston.

TRIBE ADELOSTOMINI.

ARGASIDUS, gen nov.

Geophano vel *Acesto* verisimilis, structura antennarum habituque præcipue differt; antennæ rigidæ mediocres, articulo 10° sat valido, sub-cylindrico, 2°, 1° dimidio brevior, quadrato, 3° præcedenti nonnihil angustiore dimidioque brevior, 4°-9° monilibus, æqualibus, longitudine duplo latioribus, ultimo præcedenti duplo longior, vix latiore, apice oblique truncato, excavato, articulis omnis, ultimo excepto, setis crassis squamosis coronatis, articulis basalibus tribus etiam squamosis obsitis; prothorax elytris contiguus; his parallelis, versus apicem conjunctim rotundatis atque nonnihil attenuatis; pedes mediocres.

ARGASIDUS SQUAMOSUS,

Plate VI., fig. 7.

Niger, opacus; caput depressum, dense squamosum, lineis duabus lateralibus a basi ad medium ductis denudatis; prothorax longitudine fere duplo latior, ab apice ante medium sub-diagonaliter productus, deinde versus basim fere rectus, apice circulatim emarginatus, basi rectus, depressus, marginibus incrassatis, late reflexis, disco plano, superficie tota squamis latis, sub-ochraceis vestita; scutellum nudum; elytra prothoracis latitudine æqualia, fere triplo longiora, parallela, postice conjunctim rotundata, plana, marginibus laterum ut in prothorace incrassatis reflexisque, squamis densis obtectis

lateribus confertim punctato seriatis, dorso depresso, profunde punctato, punctis squamis repletis; subtus squamosus; pedes mediocres, parce squamosi. Long. 7 mm.; lat. 3 mm.

This singular insect is very much like an *Argas* in general appearance.

Hab. Cape Colony (Prieska). Dr. W. F. Purcell.

TRIBE EPITRAGINI.

GEN. DEROSTROPHUS, Fairm.

DEROSTROPHUS FORCIPATUS,

Plate VI., fig. 5, 5a.

Piceus, palpis, antennis pedibusque rufo-brunneis; caput confertim, epistoma crebrius punctatum; ♂ mandibulis processu basali porrecto, capite longitudine æquali, externe convexiusculo, interne excavato, apice incurvo, forcipato, margine exteriores ante medium distincte incisa, singulo munito; antennæ humeros attingentes; prothorax fere globosus, basi apice nonnihil angustior, angulis rectis, posticis sub-prominulis, crebre punctulatus; elytra antice prothorace haud latiora, fere parallela, postice acuminata, convexa, tenuiter, anguste striato-punctata, punctis confertis, sat profundis, interstitiis impunctatis; subtus castaneus, crebre punctatus; pedes punctulati. Long. 11 mm.; lat. $3\frac{1}{2}$ mm.

Allied to *D. xanthopus*, Fairm., but of larger size; the prothorax is more rounded laterally; the elytra are less convex, and the shape of the erect process at the base of each mandible is different, being of the same length as the head, nearly vertical but slightly bent backwards, and strongly incurved, forceps-like; it is slightly convex outwardly, scooped inwardly, and with the hind margin strongly emarginate near the incurved part.

Hab. Cape Colony (Kimberley).

DEROSTROPHUS HOTTENTOTUS.

Piceo-brunneus, nitidus, antennis pedibusque castaneo-rufis; caput crebre rudeque punctatum, ♂ mandibulis basi cornu sub-porrecto, inflexo, forcipato, a medio apice inferne excavato, utrinque carinatio, ♀ mandibulis inermis; antennæ ultra medium corporis attingentes; prothorax longitudine latitudine quarto latior, ab apice pone medium

ampliatus, ubi angulatus, deinde ad basim sinuatus, basi apice haud latior, angulis rectis, posticis evidentioribus, totus marginatus, supra antice nonnihil convexus, punctis sat profundis, confertis, obsitus; elytra oblonga, versus apicem sub-acuminata, basi prothorace nonnihil latiora et triplo longiora, ♀ pone medium perparum ampliata, striato punctata, striis geminatis, punctis haud profundis, interstitiis punctis nonnullis prope suturam densioribus adspersis; subtus pedesque glabri, crebre punctati. Long. 11–13 mm.; lat. 4–5 mm.

Easily distinguished by the geminate striæ of the elytra; the process of the mandibles is longer than in *D. castaneo-rufus*, Fairm., and *D. xanthopus*, Fairm., more forcipate, of nearly equal width from base to apex, and excavated inwardly from the median part to the curved tip.

Hab. Cape Colony (O’Kiep, Spectakel, Namaqualand), L. Péringuey; Damaraland (Walfish Bay), C. Nightingale.

DEROSTROPHUS DAMARINUS.

Rufo-brunneus, nitidus; caput crebre punctatum, ♂ mandibulis cornu crasso, recurvo, basi lato, apice acuminato, capite tertio brevior utrinque armatis; antennæ medium corporis vix attingentes; prothorax fere orbicularis, lateribus ad basim leviter sinuatis, angulis anticis posticisque prominulis, totus marginatus, crebre punctulatus; elytra elongata, oblonga, basi prothorace nonnihil latiora et triplo longiora, pone medium perparum ampliata, convexa, distincte striato punctata, interstitiis alternis convexiuseulis; subtus punctatus, nitidus, abdominis segmentibus maris in medio brevissime pubescentibus; pedes punctulati. Long. 12 mm.; lat. 4 mm.

Closely allied to *D. castaneo-rufus*, Fairm., but the process of the mandibles is not incised inwardly at base, nor is it quite so hooked inwardly at tip; the antennæ are much shorter, and the three penultimate joints are thicker and shorter; the prothorax is more convex.

Hab. Damaraland. T. T. Christie.

DEROSTROPHUS CONSOBRINUS.

Præcedenti valde affinis, sed minor, differt mandibulis in mare basi angustioribus, prothoracis lateribus pone medium ad basim magis obliquis elytrorumque interstitiis haud convexiuseulis. Long. $8\frac{1}{2}$ –9 mm.; lat. 3 mm.

Hab. Cape Colony (Hopefield, O’Kiep). L. Péringuey.

DEROSTROPHUS MAXILLOSUS.

Rufo-brunneus, nitidus; caput crebre punctatum, inter oculos conspicue circulatim impressum, mandibulis maris latis, curvatis interne valde concavis, apice tri-dentatis, dente media bifida cæteris longiore; feminae simplicibus; prothorax longitudine haud latior, regulariter rotundatus, apice fere rectus angulis acutis, basi bisinuatus angulis prominulis, supra convexus, crebre punctulatus; elytra prothorace basi nonnihil latiora, triplo longiora, versus apicem attenuata, basi sub-sinuata, humeris prominulis, supra sat convexa, anguste punctato-striata; corpus subtus crebre punctulatum, segmentis abdominis ♂ quatuor in medio flavo penicillatis; pedes breves, graciles, leves. Long. 10–11 mm.; lat. 4 mm.

Hab. Cape Colony (Carnarvon). E. G. Alston.

DEROSTROPHUS LATICOLLIS.

Piceus, antennis pedibusque rufo-brunneis; caput creberrime rûde punctatum; antennæ medium corporis haud attingentes; prothorax late rotundato ampliatus, longitudine tertio latior, ad basim perparum sinuatus, angulis posticis acutis, prominulis, anticis fere rotundatis, basi apice fere quarto latior, supra modice convexus, dorso in medio anticeque crebre punctulato, punctis laterum elongatis, fere strigillatis; elytra elongata, sub-oblonga, basi prothorace nonnihil angustiora, pone medium perparum ampliata ubi prothoracis latitudine æqualia, supra convexa, distincte punctato striata, interstitiis impunctatis; subtus nitidus, glaber, confertim punctatus. Long. $9\frac{1}{2}$ mm.; lat. 4 mm.

The male is unknown to me. This species is easily recognisable owing to the width of the prothorax, which is much broader than on the other species known hitherto.

Hab. Cape Colony (Robertson). Dr. W. F. Purcell.

DEROSTROPHUS DISSIDENS.

Piceo brunneus, sub-nitidus, pedibus antennisque dilutioribus, his fere longitudine dimidii corporis; caput crebre punctatum; prothorax ab apice prope basim fere orbicularis, ubi brevissime attenuatus, angulis posticis prominulis, supra modice convexus, crebre profundeque punctatus; elytra elongata, sub-oblonga basi prothoracis latitudine maxima æqualia, pone medium vix latiora, supra convexa, distincte striato-punctata, punctis confluentibus,

interstitiis serie e punctis minoribus crebris formata; subtus sat fortiter dense punctatus, pectore abdominisque lateribus punctis distinctioribus. Long. 11 mm.; lat. $3\frac{1}{2}$ mm.

Male unknown.

The distinctive characters of this species are: the orbicular prothorax, the narrower shape of the elytra, which are hardly broader at the widest part than the prothorax, and the sculpture of the elytra which are striate with the striæ filled with confluent, equal punctures, whereas in all the other species the punctures form the striæ.

Hab. Damaraland (Goagas). C. Walmer.

DEROSTROPHUS HUMILIS.

Piceus vel rufo-brunneus; caput punctulatum, antennæ pone basim elytrorum vix attingentes; prothorax apice basi haud angustior, vix latior quam longior, angulis anticis posticisque rectis, his sub-prominulis, lateribus ab apice prope basim leviter rotundatis, vix ampliatis, supra perparum convexus, crebre punctatus; elytra elongata, basi prothorace nonnihil, post medium tertio latiora, supra convexa, in dorso punctato-striata, lateribus striato-punctatis, interstitiis serie e punctis minoribus formata, in disco minus, lateraliter magis distincta; corpus subtus pedesque ut in præcedenti. ♀ Long. 10–11 mm.; lat. $3\frac{3}{4}$ mm.

Resembles the female of *D. mandibularis*; but the prothorax is longer in proportion to the width, and therefore less rounded laterally; the sculpture of the intervals differs, the intervals in *D. mandibularis* being impunctate.

Hab. Damaraland.

XENUS, gen. nov.

Corpus oblongum, nudum, alatum; capite parvum, carina elevata ante-oculari præditum; labrum pubescens; mandibulæ breves inermes; palpi maxillares sub-elongati, articulo ultimo sub-securiformi; antennæ corpore dimidio brevior, articulis ultimis quatuor sub-hexagonis, ultimo præcedenti brevior; prothorax transversus, lateribus sub-rectis; pedes graciles, tarsi, longi, unguibus sub-validis.

♂ capite tri-cornuto; ♀ inermi.

Allied to *Derostrophus*; the facies is nearly similar, but the mandibles have no sub-vertical process at base in the male; the eyes are

more prominent, although the ante-ocular ridge is nearly similar, and the four last joints of the antennæ are nearly hexagonal instead of conical, and decrease gradually in length, so that the last one is hardly half the length of the third.

XENUS TRICORNIGER,

Plate VI., fig. 6, 6a.

Nigro piceus, sub-nitidus, tarsis, articulis ultimis antennarum palporumque castaneo-rufis; caput in medio impressum, crebre punctulatum, ♂ cornibus porrectis, gracilibus tribus capitis longitudine æqualibus, armato, antico sub-ensiforme, reliquis ante oculos positis, ad apicem compressis atque valde incurvis; ♀ caput inerme; prothorax antice nonnihil rotundatim attenuatus, lateribus haud ampliatis, prope basim perparum attenuatus, basi sinuatus, ubi apice nonnihil angustior, supra modice convexus, totus marginatus, angulis rectis, haud prominulis, punctis profundis confertis obsitus; elytra oblongo-ovalia, elongata, prothorace basi nonnihil, post medium fere tertio latiora, triplo longiora, supra convexa, anguste punctato-seriata, interstitiis punctis minus acervatis seriatis; subtus fortiter punctatus; pedes glabri, femoribus densius punctatis. Long. 11–13 mm.; lat. $4\frac{1}{4}$ –5 mm.

Hab. Cape Colony (Bushmanland). G. Alston.

TRIBE ADELSTOMIDÆ.

GEN. MACHLA, Herbst.

MACHLA AGRESTIS.

Nigra, capite prothoraceque crebre punctatis, punctis squamis repletis, elytris indumento squamoso ochraceo-terreno dense vestitis; caput sparse punctatum, vertice leviter impressum, lobis ocularibus modice productis; prothorax longitudine tertio latior, apice circumlatum emarginatus, basi vix sinuatus, longe pone medium lateraliter ab angulo antico rotundato ampliatus, deinde versus basim rotundatus, haud constrictus, supra modice convexus, marginibus laterum modice incrassatis, recurvis, setulosis, infra vix canaliculatis, lateribus ipsis anguste sulcatis; scutellum glabrum; elytra antice prothoracis basi latitudine æqualia, longe pone humeros perparum ampliata, ubi prothorace fere quarto latiora, supra nonnihil convexa, postice declivia,

costis in singulo tribus postice abbreviatis, discoidalibus duabus a basi fere ad medium carinatis, deinde verrucis continuatis, costa marginali tota verrucosa, cum intermedia connexa, prædita, interstitiis verrucis nonnullis minoribus, glabris, sub-seriatis, obsitis; pectus profunde atque sat crebre punctatum, abdomen nitidum, laxè punctulatum, glabrum; pedes rugosuli longe piloso-setosi. Long. 15–18 mm.; lat. $7-8\frac{1}{2}$ mm.

Belongs to the same group as *M. carinata*, Herbst, but is very distinct.

Hab. Cape Colony (Malmesbury). R. M. Lightfoot.

MACHLA LITA.

Nigra, nitida, indumento ochraceo dense vestita, capite, prothoracis lateribus costisque elytrorum setosis, setis nonnunquam longissimis; caput in medio impressum, lobis anteoocularibus prominulis; prothorax apice profunde circulatim emarginatus, basi leviter bi-sinuatus, lateraliter ad medium late rotundato-ampliatus, deinde ad basim contractus, angulis posticis sat acutis, haud prominulis, laterum marginibus valde incrassatis, elevatis, reflexis, infra profunde excavatis, dorso deplanato, rugis duabus longitudinalibus in medio, antice perparum oblitteratis atque nonnunquam ruga transverse in medio connexis tuberculoque transverso utrinque ad medium posito instructo, parte postica disci late tri-impressa; elytra antice basi prothoracis haud latiora, in femina post medium magis ampliata, supra depressa, postice declivia, costis tribus tuberculis in singulo prædita, suturæ proxima reliquis brevior, postice callo transverso ad suturam ducto terminata, intermedia laterali haud brevior atque cum ea basi connexa; corpus subtus pedesque ut in *M. agresti*. Long. 10–12 mm.; lat. 6–7 mm.

Hab. Cape Colony (Mossel Bay), W. F. Purcell; (George).

MACHLOMORPHA, gen. nov.

Machlæ verisimilis; habitus structuraque antennarum, ut in illa, differt lateribus prothoracis infra pro receptione antennarum haud excavatis, processu prosternali apice rotundato, haud acute producto, mesosterno haud inciso, tarsisque gracilioribus, unguibus longioribus.

MACHLOMORPHA ALTITUDINIS.

Nigra, pube squamosa sparse obsita; caput rude profundeque punctatum, apice longitrorsum foveatum, inter antennis transversim impressum, lobis ante-ocularibus modice prominulis; prothorax, apice nonnihil emarginatus, basi leviter bisinuatus, angulis totis sub-acutis, prominulis, regulariter rotundato ampliatus, sed basi apice nonnihil latior, convexus, profunde sat crebre punctatus, sulco medio longitudinali, lateribus anguste depressis, margine acuta, haud reflexa; elytra antice prothoracis basi nonnihil angustiora, pone medium ampliata, ubi basi duplo latiora, convexa, dehiscentia, præter suturam elevatam, margine laterali costisque duabus levibus in disco positis ad apicem declivitatis terminatis, ubi conjunctis, in singulo prædita, interstitiis vix punctulatis, pube squamosa sparsim vestita; subtus sat dense punctatus, abdomine fere levi; pedes rugosi, setulosi. Long. 12–14 mm.; lat. 6–7 mm.

Captured at the top of the highest peak in South Africa (Mont aux Sources, altitude 10,000 feet), by Mr. G. Mann.

MACHLOMORPHA DIVERSA.

Brunnea, indumento ochraceo squamoso oblecta; caput rude coriaceum, lobis ante-ocularibus valde prominulis; prothorax antice circulatim emarginatus, angulis productis, ab angulo antico basi modice ampliatus, versus basim haud attenuatus vel emarginatus, basi apice fere duplo latior, lateribus sat late deplanatis, margine laterum valde reflexa, disco rude coriaceo, postice nonnihil elevato, haud sculpturato, basi modice bi-sinuata, angulis acutis, prominulis; elytra basi prothoracis latitudine fere æqualia, ad medium perparum ampliata, supra plana, apice dehiscentia, crebre minuteque punctulata, præter marginem lateralem acutam costa discoidali antice carinata, ad medium sub-undulata, postice abbreviata, in singulo prædita, parte postica prope suturam interstitioque supra laterali tuberculis sat confertis obsitis, sutura apice elevata; subtus dense minuteque granulosa, breviter pubescens; pedes crebre granuloso-punctati, setulosi. Long. 14 mm.; lat. 8 mm.

Hab. Natal (no exact locality).

GEN. ASIDA, Latr.

ASIDA DEVIA.

Nigra, indumento terreno vel ochraceo oblecta, marginibus pro-

thoracis, rugis tuberculisque setulosis; caput vertice bi-callosum, inter antennis profunde circulatim impressum, lobis ante ocularibus valde productis; antennæ articulo ultimo lato, a medio turbinato apice truncato, dimidia parte dense flavo pubescente; prothorax longitudine fere tertio latior, apice profunde emarginatus, angulis sub-acutis, basi bi-sinuatus, angulis posticis acutis, prominulis, lateribus in medio acuminatis, margine laterum sat crasso, reflexo, supra rugis longitudinalibus duobus validis, spatium sub-caniculatum includentibus, a medio apice sub-oblitteratis tuberculoque parvo utroque notatis; elytra antice latitudine baseos prothoracis, sub-parallelæ, supra in disco depressa, postice declivia, præter marginem lateralem e tuberculis setiferis haud confertis formatam, costa dorsali tuberculata, longe ante apicem attenuata, utroque prædita, sutura granulosa, interstitiis tuberculis parvis setigeris seriatis sat dense obsitis; pedes mediocres, setulosi; corpus subtus laxè punctatum, tenuiter pubescens. Long. 19 mm.; lat. 7 mm.

Hab. Natal (Maritzburg).

ASIDA NATALIS.

Nigra, indumento griseo vestita, marginibus prothoracis rugis tuberculisque haud setulosis; caput vertice tri-callosum; antennæ articulo ultimo brevi conspicue truncato; prothorax latitudine longitudine tertio latior, apice circulatim emarginatus, basi profunde bi-sinuatus, angulis posticis acutis, prominulis, ad medium laterum sub-acuminatim ampliatus, intra basim nonnihil constrictus, marginibus laterum ab apice ultra medium crassis, nonnihil reflexis, infra profunde canaliculatis, supra deplanatus, rugis duabus longitudinalibus, æqualibus, ab apice basi ductis, tuberculisque duobus rugam sinuatam formantibus utroque positis; elytra antice prothorace basi æqualia, post medium prothoracis latitudine maxima quarto latiora, antice deplanata, post medium vix convexa, postice valde declivia, sutura elevata, præter costam lateralem e tuberculis haud confertis formata, carina dorsali tuberculosa procul ab apice terminata ubi linea circulari verrucosa cum sutura connexa, postice in seriem granulorum apicem attingente continuata, in singulo prædita, interstitiis sparsim, ad latera densius, tuberculatis, tuberculis sub-nitidis, glabris; pedes dense terreno tomentosi; prosternum rude punctatum, abdomen impunctatum. Long. 11–11½ mm.; lat. 6 mm.

Hab. Natal (Frere). G. A. K. Marshall.

ASIDA TRANSVAALENSIS.

Nigra, indumento terreno vel fulvo oblecta, marginibus prothoracis brevissime setosis, tuberculis elytrorum glabris; caput scrobiculatum, depressum, lobis ante ocularibus sat fortiter productis; prothorax in dorso scrobiculatus, ad latera rugosus, longitudine duplo latior, apice circulatim emarginatus, basi bi-sinuatus, angulis omnibus acutis sed haud prominulis, lateribus ab apice pone medium rotundato ampliatis, deinde ad basim haud constrictis, marginibus haud crassis, valde reflexis, infra concavis sed haud canaliculatis, supra disco valde elevato, rotundato; elytra antice prothorace basi haud latiora, post medium ampliata, ubi prothoracis parte maxima nonnihil latiora, paullum convexa, postice valde declivia, ad latera posticeque verrucosa, antice prope basim laeviora, præter costam lateralem e verrucis confertis formata, carina sub-acuta, verrucosa, cum laterali basi connexa, procul ab apice abbreviata rudimentoque basali costæ interioris in singulo prædita, sutura perparum elevata; prosternum rude punctatum, abdomen distincte punctulatum, brevissime pilosum; pedes fulvo pubescentes. Long. 15 mm.; lat. 9 mm.

Hab. Transvaal (Potchefstroom). T. Ayres.

ASIDA ZULA.

Nigra, indumento terreno oblecta, marginibus prothoracis breviter setosis; caput in medio leviter impressum, punctulatum, lobis ante-ocularibus sat fortiter productis; prothorax leviter scrobiculatus, longitudine fere duplo latior, apice circulatim emarginatus, basi bi-sinuatus, basi ipsa in medio nonnihil aculeata, angulis posticis prominentibus, lateribus ab apice pone medium sub-diagonaliter, ampliatis, deinde ad basim haud constrictis, marginibus haud crassis, modice reflexis, infra canaliculatis, supra paullum convexus lateribus sat anguste deplanatis, medio canaliculato fossaque basali notato; elytra antice prothorace basi haud latiora, post medium parum ampliata, supra deplanata, postice sat longe dehiscentia, crebre verrucosa, verrucis glabris, sutura elevata, præter costam verrucosam lateralem carina acuta longe procul ab apice terminata cum costa laterali basi connexa rudimentoque basali costæ interioris in singulo instructis; subtus rugosa, pectore ochraceo tomentoso, abdomine profunde punctato, sub-pubescente; pedes ochraceo squamosi, breviter setulosi. Long. 14–15 mm.; lat. $6\frac{1}{2}$ –8 mm.

Much more parallel than the preceding species, and with the discoidal part of the prothorax less raised, less scrobiculate; the outer

margins are thinner and less recurved, and there is a distinct longitudinal groove in the centre; the median part of the base is not angular in *A. transvaalensis*.

Hab. Zululand (Eshowe). A. Windham.

ASIDA CONSOBRINA.

Nigra, opaca, capite prothoraceque crebre punctatis, punctis squamis ochraceis repletis; caput in medio impressum, lobis anteoocularibus modice productis; prothorax longitudine fere dimidio latior, parum rotundatus, ad basim haud constrictus, basi apice dimidio latiore, bi-sinuata, medio in processu angulato producta, supra nonnihil convexus, medio linea longitudinali insculpto; elytra antice prothorace basi nonnihil angustiora, ad tertiam partem longitudinis paullum ampliata, convexa, postice declivia, lateribus fossulatis, medio laxiore sed late punctato, squamulis griseis nonnullis adspersa, singulo præter costam lateralem sublaceratam, carina levi longe ante apicem abbreviata, rudimentoque obliquo basali costæ interioris, sutura parum elevata; subtus ut in specie præcedenti. Long. 17 mm.; lat. 10 mm.

Closely allied to the preceding species owing to the general appearance and shape, but larger, more convex on the elytra, the sides of which are foveate instead of being verrucose; the median part of the base of the prothorax is also produced in an angular process much more distinct than in *A. zula*, and the disk of the prothorax is also more convex; the basal rudiment of another dorsal costa in the elytra is oblique instead of being straight.

Hab. Zululand (Eshowe).

ASIDA ZAMBESIANA.

Nigra, opaca, pube ochracea breve sat dense vestita; caput profunde crebreque punctatum; prothorax crebre punctatus longitudine tertio latior, rotundato ampliatus, ad basim vix attenuatus, lateribus sat late deplanatis, marginibus acutis brevissime setulosis, distincte reflexis, infra haud canaliculatis, disco modice convexo, linea longitudinali obsoleta, basi bi-sinuata, angulis posticis acutis, prominulis; elytra antice prothorace basi nonnihil angustiora ante medium perparum ampliata, supra nonnihil deplanata, postice dehiscentia, margine laterali dorsi crenulata, setulosa carinaque dorsali etiam breviter setulosa, procul ab apice terminata, recta ad humerum haud ducta, in singulo instructa, sutura haud elevata;

interstitiis breve fulvo setulosis, impunctatis; corpus subtus pedesque ut in speciebus antecedentibus. Long. 19 mm.; lat. 10 mm.

Evidently allied to *A. bi-costata*, Fahr., but the elytra are impunctate, and the dorsal costa is not directed obliquely towards the base.

Hab. Zambesia, ? Victoria Falls.

ASIDA ABERRANS.

Nigra, indumento terreno obtecta, supra setulosa; caput in medio impressum, vertice sub-fossulatum, rugosum, breviter pilosum, lobis anteocularibus valde prominulis; prothorax longitudine fere duplo lator, pone medium valde rotundato-ampliatum, ad basim minus attenuatus, lateribus anguste deplanatis, marginibus laterum sat crassis, reflexis, disco convexo, postice sensim elevato, areolis parvis quatuor transversim positis notato, dense brevissimeque setulosus, basi sub-circulari, angulis prominulis, margine laterum infra sat profunde canaliculata; elytra antice prothorace basi vix angustiora, pone medium ampliata, ubi prothorace perparum latiora, supra vix convexa, postice declivia, margine laterali costisque dorsalibus duabus approximatis procul ab apice abbreviatis granuloso setosis, suturæ proxima vix perspicua, intermedia ad basim carinata utroque prædita, interstitiis granulatis, granulis sparsis, setulosis, in medio disci humilioribus; corpus subtus sat dense squamosum; pedes dense brunneo-tomentosi, setulosi. Long. 10 mm.; lat. 6 mm.

Hab. Cape Colony (Graham's Town).

ASIDA PAUPERATA.

Nigra, indumento griseo obtecta, supra glabra; caput antice impressum, vertice sat late sed haud profunde foveatum; prothorace rugosulum, disco sat crebre punctulato, elevato, longitudinaliter perspicue canaliculato, impressionibus duabus utroque notato, lateribus late deplanatis, marginibus sat crassis, reflexis, infra excavatis; elytra antice prothoracis basi nonnihil angustiora, post medium latitudine maxima ejusdem æqualia, supra sub-deplanata, postice declivia, sat crebre sub-seriatim granulata, margine laterali costisque duabus granulatis, intermedia ad basim carinata cum suturæ proxima procul ab apice connexa atque in callo producta, utroque prædita, costa suturæ proxima interdum fere oblitterata, sutura postice granulosa, elevata; corpus subtus sat dense squamo-

sum; pedes dense griseo tomentosi, setulosi. Long. 10 mm.: lat. $5\frac{1}{2}$ mm.

Hab. Cape Colony (Graham's Town).

ASIDA MOSSAMBICA.

Nigra, indumento terreno obtecta pubesque setulosa fulvescente vestita; caput crebre rudeque punctulatum, inter antennis transversim impressum, vertice obsolete foveolatum, lobis ante-ocularibus prominulis; prothorax crebre punctatus regulariter rotundato-ampliatus, apice circulatim emarginatus, basi sinuatus angulis posticis prominulis, disco vix elevato, lateribus sat deplanatis, marginibus laterum modice acutis, reflexis, infra excavatis; elytra antice prothorace basi vix latiora, post medium latitudine maxima ejusdem æqualia, versus apicem acuminata, supra depressa, postice longe declivia, margine laterali acuta carinaque transversa discoidali, pone medium posita, utroque prædita; subtus breviter fulvo pubescens; pedes subtiliter setulosi. Long. 11 mm.; lat. 6 mm.

This species is easily distinguished by the small transverse ridge situated on each side of the elytra at the top of the declivity.

Hab. Mozambique (Rikatla). Rev. H. Junod.

ASIDA TURBIDA.

Nigra, indumento terreno obtecta, setulis brevibus dense vestita; caput antice verticeque haud distincte impressum, confertim setosum; prothorax apice late circulatim emarginatus, lateraliter ab angulo laterali pone medium modice rotundato ampliatus, dein ad basim profunde sinuatus, angulis posticis acuminatis, prominulis, basi ad latera utroque incisus, supra vix elevatus, crebre setulosus, lateribus sat deplanatis, margine laterum vix reflexa, infra haud excavata, supra basim utroque sat distincte impressus; elytra antice prothorace basi perparum latiora, post medium nonnihil ampliata, rugosula, crebre setosa, supra deplanata, postice longe dehiscencia, margine laterali verrucosa, ad humeros crassiora rudimentoque basali costæ discoidalis utroque prædita; corpus subtus pedesque brevissime setulosa. Long. 11 mm.; lat. 6 mm.

Hab. Cape Colony (Cape Town). A. Raffray.

ASIDA UMBRINA.

Nigra, pube fulvescente obtecta pilisque erectis longis, nigris densissime vestita; caput rugosum, vix impressum, lobis anteocu-

laribus modice prominulis; prothorax apice circulatim emarginatus, angulis valde prominulis, lateraliter ad medium sub-angulatim ampliatus, postice minus attenuatus, basi bi-sinuatus, angulis posticis rectis, disco elevato, leviter canaliculato, lateribus sat late deplanatis, margine laterum modice crassa, perparum reflexa, infra haud excavata, disco maculis velutinis fuscis duabus utroque ornato; elytra antice prothorace basi haud latiora, pone humeros acutos sinuata, ad medium ampliata, ubi prothoracis parte maxima fere æqualia, supra vix convexa, postice modice declivia, dense setulosa, serie e maculis fasciculatis fuscis, velutinis plagaque suturali elongata, basi distinctiore ornata, margine laterali acuta, usque ad apicem ducta; corpus subtus dense longeque fulvopubescent; pedes longe setulosi. Long. 12 mm.; lat. 6 mm.

Hab. Mozambique (Rikatla). Rev. H. Junod.

ASIDA NAMAQUA.

Nigra, pube breve sparse obtecta, lateribus longe villosis; caput rugosum, in medio impressum, lobis anteocularibus valde prominulis; prothorax rugoso punctatus, convexus, in medio late sulcatus, disco utroque impressionibus rotundatis duabus notato, antice circulatim emarginatus, basi bi-sinuatus, angulis posticis acutis, prominentibus, lateraliter ab angulo antico fere ad basim rotundato-ampliatus, lateribus vix deplanatis, margine laterum sat acuta, serrulata, infra haud canaliculata; scutellum pube flavesciente obtectum; elytra antice prothorace haud angustiora, pone medium basi haud latiora, convexa, postice dehiscentia, granulis sat validis nitidis series magis minusque regulares formantibus prædita, margine laterali serrulata atque ut in prothoracis lateribus longe villosa, maculis velutinis umbrinis tribus, duabus anticis juxta suturam, altera fere in medio posticæ partis positis utroque ornata; corpus subtus profunde punctatum, sparse setulosum; pedes brevissime setulosi, rugosi, tibiis externe distincte denticulatis. Long. 10 mm.; lat. 6 mm.

This species is very different from the South African ones owing to the more ovate shape of the elytra, and also of that of the prothorax, the sides of which are gradually amplify and rounded from the outer angle to near the base, the angle of which is very sharp and prominent; the tibiæ are distinctly denticulate outwardly.

Hab. Cape Colony (Namaqualand). L. Péringuey.

ASIDA LUTULENTA.

Nigra, indumento griseo vel ochraceo obtecta, pube setulosa brevi

dense vestita; caput in medio vix impressum, lobis ante-ocularibus modice prominulis; prothorax antice late circulatim emarginatus, postice profunde bisinuatus, angulis acutis sat prominulis, ab angulo antico pone medium lateratum rotundato amplius, dein basi haud sensim obliquatus, disco postice quadratim elevato, intra basim apiceque utrinque impressus, lateribus latis, deplanatis, margine crassa, infra excavata; elytra antice prothorace vix angustiora, post medium haud ampliata, plana, postice dehiscentia, margine laterali tuberculata, verrucis setiferis, elongatis, fere coherentibus, ad basim nonnunquam costam formantibus, ante apicem evanescentibus in singulo bi-seriatis, interstitio laterali postice sparse verrucoso; corpus subtile vix setosum; pedes brevissime sed dense setulosi. Long. $9\frac{1}{2}$ – $10\frac{1}{2}$ mm.; lat. 5 – $5\frac{1}{2}$ mm.

Hab. Cape Colony (Mossel Bay). Dr. W. F. Purcell.

ASIDA UNIGENA,

Tab. VI., fig. 8.

Nigra, pube squamosa ochracea vel nigrescente, dense oblecta; caput rugose punctatum, breviter setulosum, vertice longitudinaliter tri-impressum, lobis ante-ocularibus, distinctis; prothorax longitudine vix latior, apice late circulatim emarginatus, basi haud sinuatus, angulis, posticis rectis, ab angulo antico pone medium rotundatus, parum amplius, dein basi fere rectus, profunde crebreque punctatus, punctis squamis repletis, in medio sat profunde canaliculatus atque utrinque impressus, lateribus longitudinaliter apiceque transversim sulcatis, margine laterum sat crassum, vix reflexum, infra haud excavatum; elytra elongata; antice prothoracis basi æqualia, post medium haud ampliata, plana, apice breviter dehiscentia, rugosa, margine laterali acuta costulisque duabus sinuosis, e rugis interruptis, irregularibus, formatis, apicem haud attingentibus, interstitiis variolosis, utrinque prædita; corpus subtile pedesque ut in specie præcedenti. Long. 8–10 mm.; lat. $3\frac{1}{2}$ –5 mm.

Hab. Cape Colony (Cape Town, Ceres, Malmesbury). R. M. Lightfoot, Dr. W. F. Purcell.

ASIDA LECTA.

Nigra, indumento terreno oblecta, vix setulosa; caput vertice tri-impressum, lobis ante-ocularibus prominulis; prothorax longitudine tertio latior, apice circulatim emarginatus, basi breviter bi-sinuatus, lateraliter ab apice pone medium late rotundato-amplius, dein basi

fere rectus, disco parum elevato, antice arcuatim impresso, intra basim carinis duabus brevibus, medium haud attingentibus, munito impressione que lata sat profunda utroque notato, lateribus antice sat late depressis, margine sub-acuta, infra haud excavata; elytra antice basi prothoracis vix latiora, pone medium perparum ampliata, supra modice depressa, postice declivia, tuberculis sat validis, confertis, quadruplici serie apicem fere attingente, in singulo instructis, serie supra laterali antice oblitterata; corpus subtus et pedes ut in speciebus antecedentibus. Long. 8 mm.; lat. 4 mm.

Hab. Natal (no exact locality).

ASIDA LEGITIMA.

Nigra, ochraceo tomentosa, lateribus prothoracis, tuberculis elytorum pedibusque distincte setulosis; caput in medio verticis subfoveolatum, lobis ante ocularibus prominulis; prothorace longitudine quarto latior, ab angulo antico pone medium latissime rotundato-ampliatus, fere foliaceus, versus basim rectus, apice sensim sed haud circulatim emarginatus, basi distincte bi-sinuatus, angulis acutis, disco parum elevato, costis callosis longitudinalibus duabus, basi apice validioribus, in medio interruptis, foveam geminam includentibus notato, ad medium laterum utrinque subtiliter foveato, lateribus late sub-deplanatis, margine laterum sat crassa, distincte reflexa, infra haud canaliculata; elytra pone medium prothorace haud latiora, sat depressa, apice declivia, tuberculis validis a basi fere ad apicem utrinque trifariam seriatis obsita; corpus subtus dense ochraceo-pollinosum. Long. 8 mm.; lat. 4 mm.

Hab. Natal (D'Urban). A. D. Millar.

TRIBE MOLURINI.

GEN. AMIANTUS, Haag-Rut.

AMIANTUS MANICANUS.

Niger, pube terrena brevi dense obtectus; caput rugosum, ab oculos circulatim reflexum; prothorax vix latior quam longior, ad medium laterum rotundato-ampliatus, basi apice haud latior, angulis anticis valde acuminatis, prominulis, posticis nullis, supra gibbosus, prope basim leviter compressus, crebre foveolatus, fere in medio distincte bi-impressus, elytra basi obliqua, ad humeros prothorace

duplo latiora, quadrata, supra antice vix rotundata, postice abrupte declivia, lateribus verticalibus, carina laterali apice acute terminata partemque declivam superante costisque duabus declivitatis apicem attingentibus e carinis brevibus, distincte interruptis sub-undulatisque formatis, utroque prædita, interstitiis granulis distinctis sat confertis obsitis; pro and mesosterno rude, metasterno abdomineque subtilius punctatis; pedes rugosuli, breviter pubescentes. Long. 15 mm.; lat. 9 mm.

Hab. Zambesia (Manica). F. C. Selous.

GEN. PSAMMODES, Kirb.

PSAMMODES KARROOENSIS,

Plate VI., fig. 10.

Niger, nitidus, elytris costis tuberculis ferrugineo-rufis; antennæ graciles; caput leve; prothorax fere orbicularis, supra æqualiter convexus, basi apice nonnihil angustior, angulis anticis acutis valde prominulis, posticis rotundatis, margine laterali acuta, serrulata, lateribus anguste granulosis, disco vage punctulato, punctis omnibus setam longissimam pallidam ferentibus; elytra rotundata, a basi ampliata, supra convexa, postice valde dehiscentia, costis tribus acute crebreque tuberculatis, basim vix attingentibus, rufescentibus, interstitiisque minus seriato tuberculatis, in singulo prædita, tuberculis omnibus setiferis, setis longissimis, erectis, sutura sub-elevata, margine laterali acuta, postice deplanata serrulataque; pedes validi, femoribus crassis, dense ochraceo tomentosis. Long. 23 mm.; lat. 15–17 mm.

♂. Abdom. segment. 2° macula rotundata fulvo-tomentosa.

Allied to *P. scabratus*, Sol. The very long, pallid setæ are very easily rubbed off, and it is rare to find a pilose example.

Hab. Cape Colony (Matjesfontein, Worcester Distr.), R. Trimen; (Fraserburg).

PSAMMODES HOTTENTOTUS,

Plate VI., fig. 9.

Nigro piceus, sub-nitidus, antennæ graciles; caput antice pube ochracea dense vestitum, vertice glabrum, leve; prothorax longitudine latitudine æquali, rotundato ampliatus, basi apice haud angustior, angulis anticis acutis, prominulis, posticis oblitteratis, supra convexus

sparse punctulatus, punctis setam longissiman ferentibus, margin laterali sub-serrata, lateribus anguste granulosis; elytra rotundata, a basi ampliata, convexa, postice declivia, granis validis, longe setiferis crebre regulariterque obsita; pedes validi, femoribus crassis, fulvo tomentosis; epipleura granulata. Long. 23 mm.; lat. 15 mm.

♂. Abdom. segm. 2° ferrugineo maculato.

Similar in shape to *P. karrooensis*, but at once differentiated by the absence of costæ on the elytra and by the even distribution of the granules which bear, however, as long a seta as in *P. karrooensis*.

Hab. Cape Colony (Clanwilliam).

PSAMMODES ROTUNDIFENNIS.

Niger, nitidus; caput antice parce punctulatum, vertice leve; prothorax ut in speciebus præcedentibus, sparse punctulatus, sed glaber; elytra rotundata, convexa, postice declivia, vittis quatuor depressis rufescentibus utrinque prædita, antice punctulata, postice minute granulata et brevissime setigera; sutura sub-elevata, margine laterali acuta, postice nonnihil deplanata; pedes validi, modice elongati, ochraceo-pubescentes. Long. 22 mm.; lat. 14 mm.

♂. Abdom. segm. 2° et 3° macula orbiculari fulva, anteriore latiora.

Not unlike *P. caffer*, Fahr., but the elytra are more globose, the depressed rufescent bands are deeper, broader and better defined along the posterior declivity. It is also closely allied to *P. nitens*, Fahr.

Hab. Cape Colony (Graham's Town).

PSAMMODES MERACUS.

Niger, sub-opacus, antennis fulvo pubescentibus; caput haud punctulatum; prothorax longitudine quarto latior, regulariter rotundato ampliatus, basi vix sinuatus, angulis anticis acuminatis, posticis rectis, parum convexus, antice dehiscens, pone medium obsolete bifoveolatus, apice lateraliterque tenuiter marginatus; elytra a basi ampliata, ad medium prothorace duplo latiora, versus apicem attenuata, supra valde convexa, postice declivia, antice rugosula, postice crebre minuteque granulosa, pilis flavescentibus sub-erectis longis, basi excepta dense vestita, margine laterali acuta, pone medium versus apicem modice recurva; pedes validi, breves, dense fulvo pilosi; processus prosternalis triangulus angulis apice distincte productis. Long. 30 mm.; lat. 30 mm.

♂. Seg. abdom. tribus primis in medio fulvo tomentosus.

Not unlike in general appearance *P. ponderosus*, but the prothorax is more deflexed in the anterior part, and the elytra are more ampliatus from the very base; the sculpture and colour are, however, very different.

Hab. Transvaal (Leydenburg). E. J. Dunn.

PSAMMODES MASHUNUS,

Plate VI., fig. 13.

Niger, elytris leviter æneo micantibus; antennis piceo-rufis, gracilibus; caput vage sparseque punctulatum; prothorax longitudine latitudine fere æquali, ante-medium modice rotundato ampliatus, pone medium versus basim leviter attenuatus, angulis anticis acutis, prominulis, posticis rotundatis, supra convexus, antice sub-declivus, ad basim utrinque leviter compressus, punctis minutis adpersus, linea angusta longitudinali nuda; elytra antice latitudine baseos prothoracis, in medio ampliata, versus apicem attenuata, supra convexa, postice valde declivia, apice deplanato producta singulatimque rotundata, costata, interstitiis 2-4 ad declivitatem, 5-6 apice ultra medium acute tuberculatis, lateribus etiam apice tuberculatis, margine laterali acuta apice laminata; pedes elongati, sat validi, tibiis fulvo tomentosus. Long. 25-26½ mm.; lat. 14-15 mm.

♂. Abdom. segmentis tribus primis fulvo tomentosus.

Allied to *P. pierreti*, Amyot.; the facies is the same, but apart from the colour, which is different, the sculpture of the elytra differs also; in *P. pierreti* they are not costate, and the sides and posterior part are covered with very closely set seriate tubercles, whereas in *P. mashunus* there are only three lateral series of slightly larger tubercles not closely set, and two series in the declivous part.

Hab. Zambesia (Upper Hanyani River). G. A. K. Marshall.

PSAMMODES MÜLLERI,

Plate VI., fig. 11.

Niger, nitidus; antennæ graciles, ferruginei; caput fere leve; prothorax longitudine haud latior, ante medium vix ampliatus, angulis anticis acutis, prominulis, posticis rotundatis, supra convexus, acute marginatus, vix punctulatus; elytra antice prothorace tertio latiora, in medio leviter ampliata, versus apicem parum attenuata, margine laterali acuta, apice utrinque laminata, supra

deplanata, postice abrupte decliva, antice in medio levigata, parte postica lateribusque longitudinaliter tuberculatis; tuberculis creberrimis, seriatis; pedes elongati sub-validi, dense fulvo pilosi. Long. 25-26 mm.; lat. 14-15½ mm.

♂. Segm. abdom. tribus primis fulvo tomentosis.

A very distinct species, which I have much pleasure in calling after Herr Clemens Müller, who has very kindly compared my examples of the South African *Moluridae* with Haag Rutenberg's types, now in his possession.

Hab. Cape Colony (Pella, Bushmanland). G. Alston.

PSAMMODES RUSTICUS.

Obscure brunneus, sub-nitidus, indumento pollinosi albido tectus; caput sub-leve; prothorax longitudine quarto lator, regulariter rotundato ampliatus, basi apice haud angustior, aculis anticis acutis, prominulis, posticis rotundatis, supra convexus, disco vage punctulatus, lateribus anguste scrobiculatis; elytra sub-rotundato ovalia, a basi ampliata, versus apicem parum attenuata, supra convexa, postice sub-declivia, dense creberrimeque granulata, lateribus declivitaque dense longeque pilosis, margine laterali acuta, versus apicem parum deplanata, pedes modice elongati, dense pubescentes; processus prosternalis, fere rectus, apice emarginatus, angulis prominulis, obtuse rotundatis. Long. 19-22½ mm.; lat. 12-14 mm.

♂. Abdom. segm. tribus primis in medio fulvo tomentosis.

Somewhat similar in shape to *P. nitens*; but the prothorax is not so much amplified in the middle, and the elytra are not so rotund laterally owing to their being a little more amplified near the base; it is also not unlike *P. hottentotus*, but the elytra are not so rotund, the granulation is very much finer, and the hairs on the side and on the posterior parts are much shorter, more closely set, and nearly decumbent; it is also differentiated by the shape and number of the ventral pubescent patches in the ♂.

Hab. Cape Colony (Worcester). J. Lycett.

PSAMMODES APPROXIMANS.

Rufus brunneus, nitidus, antennis tarsisque brunneo-ferrugineis; antennæ modice graciles; caput apice profunde postice vage punctulatum; prothorax longitudine tertio lator, regulariter rotundato ampliatus sed basi apice angustior, angulis anticis modice prominulis, posticis sub-angulatis, supra modice convexus, antice

dehiscens, vage punctulatus, linea tenuissima longitudinali a medio apice ducta, fere oblitterata, notatus, supra basim vage bi-foveolatus; elytra basi prothorace angustiora, a basi ultra medium ampliata, ubi prothorace duplo latiora, deinde versus apicem modice attenuata, supra convexa, postice sub-abrupte dehiscencia, a basi medio crebre punctulata, deinde tenuiter granulosa longeque sed haud dense pubescentia; margine laterali acuta, ad apicem modice deplanata; pedes sub-elongati, dense ferrugineo tomentosi. Long. 22 mm.; lat. 13 mm.

♂. Abdom. segm. 2° macula orbiculari fulva.

Hab. Transvaal (Potchefstroom). T. Ayres.

PSAMMODES PLAUSIBILIS.

Brunneus, sub-nitidus; capite sat crebre profundeque punctatum; prothorax longitudine tertio latior, ad medium rotundato-ampliatum, postice antice magis attenuatus, basi apice nonnihil angustior, angulis anticis valde acuminatis prominulisque, acute marginatus, supra convexus, crebre punctatus, ad latera punctis evidentioribus; elytra oblongo ovalia, crebre punctulata, interstitiis antice levibus, postice rugosulis, pilisque decumbentibus griseis, basi excepta, dense vestita, margine laterali acuta, recurva, versus apicem parum deplanata; pedes sub-elongati, validi, dense fulvo pubescentes. Long. 25–25½ mm; lat. 13–14 mm.

♂. Segm. abdom. 2° et 3° macula rotundata fulva, posteriore minuta.

Somewhat shaped like *P. pubescens*, Sol., but the elytra are more oblongo-ovate, and the sculpture is different.

Hab. Orange Free State (Kronstad). Dr. Simon.

PSAMMODES PROFANUS.

Nigro-piceus, nitidus, glaber; caput fere leve; prothorax longitudine tertio latior, ad medium rotundato-ampliatum, postice antice magis attenuatus, basi apice nonnihil angustior, angulis anticis prominulis, posticis rotundatis, supra convexus, vage punctulatus, margine laterali sub-crenulata, lateribus anguste modiceque rugosis, linea longitudinali tenuissima a basi medium attingente; elytra sub-oblongo ovalia, antice minus ampliata, supra convexa, apice dehiscencia, glabra, costulis plurimis evanescentibus sub-undulatisque in singulo instructis, antice fere haud punctulata, longe pone medium granulis minutissimis sat crebris obsita; pedes validi, sub-

elongati, dense fulvo pubescentes; processus prosternalis apice utrinque spinosus. Long. 24 mm.; lat. 13 mm.

Closely allied to the preceding species; the general appearance is very similar, but the outer margin of the prothorax is more serrate, the elytra are glabrous, and the prosternal process is very distinctly spinose on each side of the apex instead of being nearly rounded.

Hab. Cape Colony (Pella). G. Alston.

PSAMMODES INTERMEDIUS.

Obscure brunneus; caput antice profunde, postice minus punctatum; prothorax longitudine quarto latior, regulariter rotundato-ampliatum; basi apice æquali, angulis anticis acutis, valde prominulis, supra convexus, crebre sed haud profunde punctatus, punctis ad latera distinctioribus, margine laterali evidenter crenulata; elytra oblongo ovalia, medio prothorace duplo latiora, convexa, apice dehiscentia, costis tribus modice distinctis utrinque prædita, granulis minutissimis creberrimisque obsita, pube grisea breve, antice oblitterata, dense tecta, sutura elevata, margine laterali acuta, reflexa, postice modice deplanata; pedes minus elongati, rugosuli parce pubescentes; processus pro-sternalis ut in *P. plausibili*. Long. 25 mm.; lat. 14 mm.

Closely allied to both the preceding species; from *P. profanus* it is easily distinguished by the shape of the pro-sternal process, which is rounded at tip instead of being spinose on each side at apex; while the elytra are not costulate in *P. plausibilis*, nor are they granulose.

Hab. Cape Colony (Stellenbosch). L. Péringuey.

PSAMMODES PRÆLIATOR.

Nigro piceus, nitidus, antennis tarsisque ferrugineis, caput sat crebre leviter punctulatum; prothorax ad medium distincte rotundato ampliatum, longitudine tertio latior, angulis anticis acutis, prominulis, posticis rotundatis, basi apice haud latior, supra convexus, dorso laxè punctatus, punctis ad latera evidentioribus, intra basim in medio bi-impressus; elytra elongata, antice latitudine baseos prothoracis, longe pone humeros gradatim ampliata, medio prothorace duplo latiora, versus apicem paullum attenuata, supra convexa, postice dehiscentia, a basi ultra medium sub-crebre sed vage punctulata, postice minute granulata, granis breviter setiferis, in dorso vagissime striata, margine laterali acuta, apice modice deplanata;

pedes breves, rude punctati, tibiis dense fulvo tomentosis. Long. 21 mm; lat. 11 mm.

♂. Abdom. segm. 2° et 3° macula orbiculari, anteriore minuta, fulvo tomentosa.

Hab. Transvaal (Potchefstroom). T. Ayres.

PSAMMODES SOLITARIUS.

Niger, nitidus, caput prothoraxque opaci, vage punctulati, hic ab apice pone medium lateraliter rotundato-ampliatus, versus basim paullum attenuatus, longitudine tertio latior, supra modice convexus, linea levi longitudinali media, basi transversim impressus, angulis anticis acutis, prominulis, posticis sub-rotundatis; elytra basi prothorace latiora, humeris haud sensim obliquis, medio basi haud latiora, supra deplanata lateribus verticalibus, postice declivia, costa supra marginali acuta costulaque discoidali prope illam posita utrinque prædita, superficie omni crebre minuteque granulata, sutura depressa, margine laterali acuta, reflexa; pedes punctulati, graciles, breves, tibiis fulvo tomentosis. Long. 15 mm.; lat. 8 mm.

The shape of the elytra is nearly similar to that of *P. tomentosus* Sol. The supra marginal carina is equally sharp, but reaches nearly the suture at a very short distance from the apex, and the base is straighter, thus giving the elytra a more quadrate appearance; the small costa next to the supra marginal one is hardly distinct.

Hab. Cape Colony (Riversdale).

PSAMMODES FLAGRANS.

Nigro piceus, crebre minuteque punctulato granulato, punctis omnibus squamulis griseis repletis; prothorax rotundato-ampliatus, basi apice haud latior, angulis anticis acutis, prominulis, latitudine longitudine fere æquali supra modice convexus, intra basim late transversim impressus, margine laterali acuta; elytra ovalia, basi prothoracis latitudine, adæquantia, medio tertio latiora, postice acuminato-attenuata, supra sub-convexa, postice modice declivia, costulis quatuor vagis sub-discoidalibus, postice abbreviatis, utrinque prædita; pedes elongati, graciles, tibiis fulvo pubescentibus. Long. 13 mm.; lat. 6 mm.

There is no new ally of this species known to me.

Hab. Transvaal (Johannesburg), J. P. Cregoe.

PSAMMODES VIETUS.

Niger, sub-nitidus; caput punctatum, punctis confertis; pro-

thorax haud profunde scrobiculatus, parvus, ante medium rotundato-ampliatum, latitudine paulo brevior, basi apice tertio angustior, angulis anticis acuminatis, supra convexus, antice deflexus, postice sub-gibbosus, medio linea longitudinali nuda; elytra antice latitudine baseos prothoracis, a basi pone medium inflata, thorace triplo longiora, medio magis duplo latiora, supra valde convexa, declivia, crebre punctata, postice rugosula, lateribus apice tenuiter granulatis, costis septem undulatis, obsolete elevatis, æquali spatio distantibus, postice abbreviatis, nec prope ad basim extensis, utrinque prædita; pedes sub-validi, dense fulvo pilosi. Long. 16 mm.; lat. 9 mm.

Not unlike in general appearance *P. scaber*, Fabr.; the form of the prothorax is nearly similar, but it is scrobiculate instead of being smooth or nearly so, and the elytra, which are also very different in sculpture, are very much more attenuate at the base.

Male unknown.

Hab. Transvaal (Leydenburg).

PSAMMODES DISSOCIATUS.

Niger, sub-nitidus, supra terreno squamosus; caput crebre scrobiculatum; prothorax ante medium rotundato ampliatum, pone medium leviter attenuatus, longitudine quarto lator, basi apice tertio angustior, angulis anticis acute productis, supra antice deflexus, postice sub-gibbosus, crebre punctatus, punctis confluentibus, marginibus totis carinatis; elytra antice latitudine baseos prothoracis, pone humeros rotundato ampliatum, medio thorace duplo latiora, postice angustata, supra deplanata, postice declivia, lateribus sub-verticalibus, crebre punctulata, pube squamosa obsita, costis in singulo sex longitudinalibus, interioribus fere obsoletis, sub-carinatis; pedes sub-graciles, breves, tibiis fulvo tomentosis. Long. 15½ mm.; lat. 9 mm.

This species is not unlike a *Dichtha*, owing to the costæ on the elytra, the outer one of which is distinctly carinate and overhangs the outer margin. The shape of the prothorax is similar to that of *P. vietus*, and is perhaps a little more flattened in the anterior part, but the elytra are much more ampliate from near the shoulders, depressed in the anterior part, and more declivous behind; the costæ are not wavy, and are more distinct.

Hab. Transvaal (Heidelberg). H. Bottomley. Zambezia (Victoria Falls).

PSAMMODES MANIFESTUS.

Niger, nitidus, antennæ sub-validæ, piceæ; caput sparse punctu-

latum; prothorax ante medium paullum ampliatus, postice sub-diagonalis, basi leviter sinuatus, longitudine tertio latior, basi apice latitudine adæquans, angulis anticis acutis prominulis, posticis rectis, supra convexus medio late profundeque punctatus, ad latera fere fossulatus, intra basim bi-impressus, margine laterali acuta, reflexa, leviter serrulata; elytra elongata, oblongo ovalia, basi prothorace haud latiora, medio parum ampliata, prothorace triplo longiora, supra convexa, levia, punctis sat crebris granulum includentibus, posticeque evanescentibus obsita; margine laterali acuta, apice haud deplanata; pedes breves, sub-validi, rugosi. Long. 30 mm.; lat. 15 mm.

Not unlike in general appearance *P. badeni*, Haag; but the prothorax is not so parallel; the elytra are a little more oblong, and the sculpture differs.

Hab. Zambesia (Manica). F. C. Selous.

PSAMMODES JUNODI.

Plate VI., fig. 15.

Niger, opacus; antennæ crassiusculæ, breves; caput inter antennas haud transversim impressum, punctis profundis cribratum; prothorax longitudine quarto latior, ad medium leviter ampliatus, basi apice haud angustior, angulis anticis prominulis, margine basali profunde emarginata, supra in medio disci paullum depressus, lateribus nonnihil deplanatis, profunde crebreque punctatus, intra basim distincte bi-foveatus, foveis vittaque marginali lata pube flavescente sericea repletis; elytra elongata, antice prothorace nonnihil angustiora, in medio vix latiora, sub-parallelæ, versus apicem parum attenuata, sub-rotundata, supra modice convexa, postice minus dehiscencia, sulcis latis profundis quatuor, primo brevior, extimo angustior, utrinque prædita, interstitiis costatis, modice elevatis, sub-rugosis, sulcis vittaque supra marginali lata pube flavescente sericea dense vestita, margine laterali acuta, reflexa; pedes breves, validi, rude profundeque punctati. Long. 45 mm.; lat. 18 mm.

♂. Segm. abdom. tribus basalibus late fulvo tomentosis.

A very distinct species.

Hab. Mozambique (Antioka). Rev. H. Junod.

PSAMMODES ALGOENSIS.

Niger, sub-opacus; antennæ crassiusculæ, breves; caput inter antennas profunde impressum, rude punctatum, antice scrobi-

culatum; prothorax longitudine quarto latior, rotundato ampliatus, in medio distincte aculeatus, postice antice minus ampliatus sed basi apice haud angustior, angulis anticis haud prominulis, posticis modice rotundatis, supra sub-depressus, margine antica laterumque carinata, intra basim vage bi-impressus, punctis profundis ad latera confluentibus crebre obsitus; elytra oblongo ovata, basi prothorace latiora, humeris sub-obliquis, medio prothorace tertio latiora, supra parum convexa, granulis distinctis creberrimis obsita, interstitiis rugosulis, costulis vagis fere obsoletis sed ad latera nonnihil evidentioribus utrinque prædita; pedes validi, breves, rude rugosi, tibiis posticis apice cavernosis. Long. 24 mm.; lat. 12 mm.

♂. Segm. abdom. basalibus tribus late fulvo tomentosis.

Allied to *P. procrustes*, Westw., but much smaller, and with a different sculpture.

Hab. Mozambique (Lourenço-Marques). J. de Coster.

PSAMMODES VALENS.

Niger vel rufo-brunneus, sub-opacus; antennæ ferrugineæ, sub-graciles, prothoracis basim attingentes; caput inter antennis profunde transversim impressum, subtiliter crebreque punctatum; prothorax latus, rotundato ampliatus, basi apice haud angustior, angulis anticis sub-prominulis, basi sinuata, supra parum convexus, granulatione minutissima, ad latera nonnihil validiora, crebre obsitus; elytra antice prothorace latiora, a basi ampliata, late ovata, versus apicem modice acuminata, supra parum convexa, creberrime subtiliterque granulata, margine laterali anguste deplanata, a basi ad apicem distincte reflexa; pedes breves, sub-graciles, rude punctati. Long. 12-14 mm.; lat. $7\frac{1}{2}$ -8 mm.

I do not know of any close ally of this species.

Hab. Mozambique (Delagoa). J. de Coster.

PSAMMODES INTEGER.

Brunneus, sub-nitidus; antennæ piceæ, sub-validæ, prothoracis basim attingentes; caput inter antennis profunde transversim impressum, fere scrobiculatum; prothorax ante medium rotundato ampliatus, postice paullum attenuatus, basi haud sinuata, apice latitudine æquali, angulis anticis prominulis, posticis rectis, supra parum convexus, medio scrobiculato, scrobiculis ad latera validioribus, margine laterali acuta, sub-serrulata; elytra basi prothorace latiora, ab humeros medio paullum ampliata, versus apicem rotundatim

attenuata, supra modice convexa, punctis subtilissimis griseo squamosis creberrime obsita, costulis obsoletis tribus utrinque vage instructis, margine laterali acuta, reflexa; pedes breves, rugosuli, tibiis anticis externe acute carinatis, valde sinuatis. Long. 15 mm.; lat. 9 mm.

The elytra are not much more convex than in *P. valens*, and of nearly the same shape, but the prothorax is less broad, the base is not emarginate, and the sculpture is different.

Hab. East Africa (Lugenda).

PSAMMODES DEBILIS.

Fuscus vel ferrugineus, labro, palpis, antennis pedibusque rufoferrugineis; caput epistomaque crebre aciculata, oculi prominuli; prothorax basi apiceque latitudine adæquans, ad medium leviter ampliatus, latitudine maxima haud longior, crebre aciculatus, antice sub-convexus, intra basim transverse leviter impressus, basi haud sinuata, angulis posticis parum prominulis; elytra basi prothoracis latitudine maxima quarto latiora, pone humeros haud ampliata, a medio versus apicem acuminata, convexa, antice obsolete aciculata, postice granulis minutissimis fere oblitteratis obsita; pedes graciles, rugosuli, calcaribus unguibusque longis. Long. 12-14 mm.; lat. 4 $\frac{3}{4}$ -5 mm.

♂. Segmentis abdominis basalibus tribus in medio fulvo tomentosus.

Not unlike in general appearance *P. villosocostatus*, Sol., but the elytra are a little narrower and more elongate, the prothorax is much narrower and more convex, the aciculation is very fine and not striolate, and the claws and spurs are longer.

Hab. Damaraland (Walvisch Bay). J. J. Cleverley.

Judging from the length of the spurs and claws, I think that it is an arenicolous insect.

PSAMMODES PROFUGUS.

Niger vel nigro piceus, palpis, antennis tibiisque ferrugineis; caput crebre punctatum, inter antennis transverse impressum; prothorax basi apiceque latitudine adæquans, globosus, obsolete punctulatus pilisque brevibus sub-flavescentibus dense vestitus; elytra antice latitudine baseos prothoracis, ad humeros obliqua, pone humeros haud ampliata, a medio ad apicem acuminata, apice singulatim aculeata, supra convexa, granulis distinctis crebris pilisque

brevibus obsita, costis tribus parum elevatis apicem haud attingentibus in singulo prædita, sutura carinulata; pedes breviusculi, rugosuli, tibiis breviter setulosi.

♂. Segmentis abdominis basalibus tribus in medio fulvo tomentosus. Long. 13–16 mm.; lat. 5–7 mm.

Hab. Cape Colony (Fraserburg, Carnarvon).

This species, and also the following ones, are distinguishable by the very convex, nearly globose prothorax.

PSAMMODES ADVENTITUS.

Niger, sub-opacus; pilis sub-brevibus sat dense obsitus, antennis pedibusque ferrugineis; caput epistomaque scrobiculata, oculi prominuli; prothorax latitudine haud longior, sub-globosus, basi apiceque latitudine adæquans, crebre aciculatus, pilosulus; elytris basi prothoracis latitudine maxima haud latiora, ad humeros obliqua, medio paullum ampliata, ubi prothorace tertio latiora, versus apicem modice acuminata, supra convexa, costis tribus sub-rotundatis apicem haud attingentibus in singulo prædita, obsolete punctulata, sat dense pilosula; pedes rugosuli, longe pilosi, tarsis elongatis. Long. 20 mm.; lat. 8 mm.

Allied to *P. profugus*, but differs in the sculpture of the head which is scrobiculate longitudinally; the prothorax is less globose; the elytra are more amplified in the middle, less convex and less sharply acuminate behind, the disk is hardly punctulate instead of being granulose, the suture is not raised, and the tarsi are much longer.

Hab. Cape Colony (Namaqualand). L. Péringuey.

PSAMMODES LÆTULUS.

Nigro piceus, labro, antennis, pedibus tarsisque ferrugineis, caput prothoraceque crebre sed haud profunde punctulati, hic latitudine parum longior, lateribus modice rotundato-ampliatis, basi apice nonnihil angustior, angulis anticis acuminato productis, basalibus obtusis, supra convexus, intra basim distincte transversim impressus; elytra elongata, antice fere latitudine baseos thoracis, medio tertio latiora, apice acuminata, supra convexa, crebre minuteque rugoso-punctata pubeque brevi sub-flavescente, posterius densiore tecta; margine laterali carinulata; pedes sub-graciles, rugosuli, ferrugineo pilosi.

♂. Segm. abdom. tribus primis ferrugineo tomentosus.

Hab. Transvaal (Potchefstroom). T. Ayres.

This species has no close ally known to me.

PSAMMODES PROCURSUS,

Plate VI., fig. 14.

Niger vel nigro piceus, sub-nitidus, antennis palpis tarsisque ferrugineis; caput parce punctulatum; prothorax longitudine haud latior, convexus, obsolete punctulatus, in medio vage canaliculatus, ateribus rotundato ampliatis, serrulatis, angulis anticis longis, acutis, posticis brevibus, basi recta; elytra prothorace triplo longiora, humeris obliquis, a basi ad medium ampliata, ubi basi duplo latiora, a medio ad apicem acuminata; supra convexa, granulis minutis antice validioribus dense obsita, margine laterali acuta, leviter reflexa; ad medium inflexa; pedes elongati, validi, valde rugosi, ferrugineo tomentosi.

♂. Segment. abdominis tribus basalibus ferrugineo tomentosis. Long. 24–30 mm.; lat. 11–13 mm.

Allied to *P. heydeni*, Haag, but much more elongate and more acuminate behind; the prothorax is smaller, and the elytra less amplate, longer, less convex in the ♂, and covered with very closely set granules which are very minute in the posterior part; the antennæ are very slender, and the tarsi are long, slender, and fringed with long hairs.

Hab. Cape Colony (Bushmanland). R. M. Lightfoot.

PSAMMODES VATICINUS.

Niger, sub-nitidus, palpis, antennis pedibusque ferrugineis; caput parce punctulatum; antennæ graciles; prothorax longitudine parum latior, convexus, lateribus rotundato ampliatis, sub-serrulatis, angulis anticis prominentibus, triangulis, posticis rotundatis, basi recta; supra crebre sed haud profunde punctulatus; elytra oblongo ovalia, antice latitudine baseos thoracis, humeris sub-obliquis, medio thorace duplo latiora, a medio ad apicem acuminata, superne convexa, granulis minutissimis antice validioribus obsita, margine laterali acuta, breviter reflexa; pedes elongati, scrobiculati, ferrugineo tomentosi.

♂. Segment. abdom. duobus basalibus ferrugineo-tomentosis. Long. 18 mm.; lat. 9 mm.

Allied to *P. steinhelli*, Haag-Rut., teste Herr Müller (this species is unknown to me), and also to *P. heydeni* and *P. procursus*; it is distinguished from the second by the more convex elytra which are not so depressed in the anterior part in the ♂, and the posterior declivity of which is more elongate; the granules are also less closely set and the anterior angles of the prothorax are much

more pronounced than in the two species above mentioned; from *P. heydeni* it is easily distinguished by the more slender facies, the elytra more acuminate behind; the sculpture of the elytra is nearly identical, and the outer margins of the prothorax are much less serrulate.

Hab. Ovampoland.

PSAMMODES PLACIDUS.

Niger sub-nitidus, elytra interdum in medio rufescentibus, palpis, antennis tarsisque ferrugineis; caput parce punctulatum, inter antennas transversim leviter impressum; prothorax ad medium rotundato amplius, longitudine fere quarto latior, basi apice haud angustior, angulis anticis parum acuminatis, supra convexus, antice parum deflexus, punctis haud profundis sat crebre obsitus, lateribus acute marginatis; elytra elongata, oblongo ovalia, antice latitudine baseos prothoracis, medio thorace duplo latiora, apice modice attenuata, supra convexa, a basi pone medium parce punctulata, postice minute granulata, in singulo costulis discoidalibus plurimis vagis saepeque oblitteratis, margine laterali acuta, reflexa; pedes validi, breves, rude profundeque punctati, breviter pilosuli; processus prosternalis in medio distincte emarginatus. Long. 26-28 mm.; lat. 12-15 mm.

♂. Segm. abdom. 1-3 in medio ferrugineo-tomentosis.

Large examples of this species are not unlike *P. grandis* of medium size, but the prothorax is not so wide, the elytra are narrower and more convex, and the shape of the posternal process is very different.

Hab. Transvaal (Johannesburg). A. Ross.

PSAMMODES EXILIS.

Niger, nitidus, palpis antennisque piceo-rufis; caput inter antennas transversim impressum, sat profunde punctatum; prothorax longitudine fere tertio latior, in medio valde rotundato-amplius, basi apice parum angustior, angulis anticis haud acuminatis, supra sub-deplanatus, crebre subtiliterque ad latera profundius punctatus, marginibus laterum modice carinatis, basi bi-impressa; elytra elongata, versus apicem modice acuminata, antice latitudine prothoracis æqualia, breviter ampliata, medio prothorace tertio latiora, supra modice convexa, granulis minutissimis postice evanescentibus parce adpersa, costis tribus longitudinalibus

obsoletis, interdum oblitteratis, in singulo prædita, margine laterali reflexa; pedes sat validi, breves, glabriusculi, subtiliter punctati. Long. 19–20 mm.; lat. 8–9 mm.

♂. Segm. abdom. 1–3 macula grisea vel ferruginea.

Hab. Cape Colony (Port Elizabeth, Uitenhage, Port Alfred).
Rev. J. A. O'Neil.

PSAMMODES INCONGRUENS,

Plate VI., fig. 17.

Niger, nitidus, palpis, antennis tarsisque piceo-rufis; caput inter antennas arcuatim impressum, antice crebre, postice parce punctulatum; prothorax longitudine duplo latior, lateraliter rotundato ampliatus, basi apice haud angustior, apice sinuatus, angulis acutis, basi rectus, angulis obtusis, supra parum convexus, marginibus laterum acutis, valde reflexis, punctulatus, ad latera scrobiculatus; elytra antice basi thoracis vix latiora, ab humeros ampliata, medio thorace fere duplo latiora, postice parum attenuata, modice convexa, antice crebre sed haud profunde punctulata, postice minute granulata, costis tribus obsoletis antice oblitteratis in singulo prædita, margine laterali acuta, distincte reflexa; pedes modice validi, breves, rugosuli. Long. 23–24 mm.; lat. 12–13 mm.

♂. Segm. abdom. 1–3 macula fulva.

A very distinct species owing to its broad prothorax with recurved lateral margin; the shape of the elytra is nearly similar to that of *P. sub-costatus*, Sol., but a little broader laterally near the base.

Hab. Cape Colony (Port Alfred). Rev. J. A. O'Neil.

PSAMMODES CÆLATUS,

Plate VI., fig. 16.

Niger, sub-nitidus, elytris rufo-ferrugineis; caput prothoraxque crebre punctati, punctis squamulis griseis repletis; hic ante medium rotundato ampliatus, longitudine fere duplo latior, basi apice nonnihil angustior, angulis anticis prominulis, posticis rectis, punctis crebris, sub-confluentibus, ad latera latioribus, omnibus squamulum includentibus, obsitus, intra basim bi-impressus, vitta longitudinali media denudata; elytra oblongo-ovalia, basi prothoracis maxima parte haud latiora, medio nonnihil ampliata, prothorace tertio latiora, convexa, vitta longitudinali juxta suturali plagisque elongatis, angustis, flexuosis, dense griseo squamosis, notata, sutura inter-

stitiisque plagarum denudatis; pedes breves. Long. 17–20 mm.; lat. 8–9 mm.

♂. Segm. abdom. tribus basalibus in medio late fulvo tomentosis.

Hab. Cape Colony (Port Elizabeth, Uitenhage). Rev. J. A. O'Neil.

PSAMMODES GARIESUS.

Niger, opacus, antennis tarsisque ferrugineis; caput antice scrobiculatum, postice rude strigillatum; prothorax ad medium rotundato ampliatus, longitudine tertio latior, basi sinuatus, apice nonnihil angustior, angulis posticis fere rectis, anticis sub-prominulis, supra sub-depressus, strigillatus, intra basim profunde bi-impressus; elytra oblongo-ovalia, antice prothoracis basi fere dimidio latior, ad medium parum ampliata, convexa, granulatione minuta, sat densa, obsita, granulis apice fere evanescentibus, margine acuta, a medio apice sub-reflexa; pedes breves, rugosuli. Long. 23 mm.; lat. $11\frac{1}{2}$ mm.

♂. Segm. abdom. tribus basalibus late fulvo tomentosis.

Hab. Cape Colony (Garies, Namaqualand). G. Alston.

Easily distinguished owing to the lustreless black of the upper part which is as dull as in *P. verecundus*. In general appearance it is not unlike *P. grandis*, Sol., but it is narrower, the prothorax is much more depressed, and the sculpture is different.

PSAMMODES PRÆSTANS.

Niger, vel nigro-piceus, sub-nitidus; caput antice leviter scrobiculatum, vertice punctatum; prothorax ante medium rotundato ampliatus, pone medium versus basim angustatus, basi apice nonnihil angustior, angulis anticis acutis, prominentibus, supra convexus, crebre profundeque punctatus, ad latera scrobiculatus, punctis scrobisque omnibus cinereo squamosis, disco leviter bi-foveolatus, intra basim profunde bi-impressus; elytra oblongo-ovalia, antice latitudine prothoracis, medio prothorace tertio latiora, convexa, sutura elevata costisque tribus sub-carinatis, inferiore brevior utroque prædita, interstitiis minutissime creberrimeque granulatis, costis punctulatis, margine laterali acuta, sub-reflexa; pedes breves, rugosi; processus prosternalis apice dilatatus, profunde emarginatus. Long. 21–26 mm.; lat. 10–13 mm.

♂. Segm. abdom. secundo macula fulvo tomentosa.

Hab. Cape Colony (Port Elizabeth, Uitenhage). Rev. J. A. O'Neil.

PSAMMODES MENDAX.

Niger, sub-nitidus supra crebre punctatus, punctis squamis griseis repletis; caput crebre punctatum, inter antennis transversim impressum; prothorax ad medium rotundato ampliatus, basi apice haud angustior, angulis anticis prominulis, posticis rectis, supra convexus, crebre profundeque punctatus, ad latera fere scrobiculatus, intra basim bi-impressus et in disco minute bi-foveolatus; elytra oblongo-ovalia, basi prothorace nonnihil latiora, supra convexa, costis denudatis tribus, distincte elevatis, interiore breviora in singulo prædita, interstitiis dense griseo squamosis, margine laterali acuta, reflexa; pedes breves, sub-graciles; processus prosternalis apice haud dilatatus neque emarginatus. Long. 20 mm.; lat. $9\frac{1}{2}$ mm.

Hab. Cape Colony (Albert). Dr. K. D. Kannemeyer.

Resembles the preceding species but is at once distinguished by the shape of the prosternal process which is neither dilated nor deeply emarginate at apex; the prothorax is also more regularly amplified towards the middle and not so much attenuate towards the base, and there is only a faint trace of the two discoidal foveæ; the elytra have the same sculpture, but they are a little less attenuate at base.

PSAMMODES PERFIDUS.

Niger, sub-nitidus, supra crebre punctatus, punctis griseo-squamosis; caput ut in *P. mendax*; prothorax ante medium aliquantum ampliatus, supra modice convexus, crebre punctatus, in disco vage bi-foveolatus, intra basim bi-impressus; elytra oblongo-ovalia, prothorace in medio fere duplo latiora, sutura costisque denudatis tribus in singulo prædita, interstitiis dense griseo squamosis, margine laterali acuta, modice reflexa; pedes processusque prosternalis ut in *P. mendax*. Long. 18 mm.; lat. 9 mm.

This species is very closely allied to the preceding one, but differs in the shape and sculpture of the prothorax which is a little narrower and very little amplified laterally in the anterior part; the punctures on the discoidal part are broader and deeper.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

PSAMMODES PROBUS.

Niger, sub-nitidus, elytris postice vage æneo-rufescentibus; caput

crebre punctulatum; prothorax amplius, longitudine tertio latior, basi leviter sinuatus, distincte marginatus, sub-sinuatus, apice emarginatus, angulis anticis acutis prominulisque, posticis rectis, lateribus ad medium rotundato-ampliatis, supra convexus, crebre punctulatus, punctis ad latera vix distinctioribus; elytra obtuse ovata, medio prothorace duplo latiora, postice parum acuminata convexa, pone medium sub-abrupte declivia fere levia; pedes breves, rugosuli, femoribus anticis clavatis, tibiisque ejusdem paris externe sinuatis; processus prosternalis ut in *P. myrmidon*. Long. 21 mm.; lat. 14 mm.

The facies is less elongate than that of *P. myrmidon*, owing to the elytra being less attenuate laterally past the middle and more abruptly dehiscent behind; the sculpture of the head and prothorax is very different.

Hab. Transvaal (Barberton). H. Bottomley.

PSAMMODES LETHARGICUS.

Niger, nitidus, palpis antennisque ferrugineis; caput modice punctulatum; prothorax longitudine fere quarto latior, ante medium leviter rotundato ampliatus, postice leviter attenuatus, basi apice haud angustior, angulis anticis acutis, posticis rectis, supra modice convexus, dorso crebre punctulatus, linea depressa brevi notatus, ad latera scrobiculatus, intra basim distincte bi-impressus, marginibus laterum tenuiter carinatis; elytra oblonga, postice sub-rotundata, pone humeros nonnihil ampliata, prothorace in medio duplo latiora, plus triplo longiora, tenuissime denseque granulata costulisque tribus parum elevatis, sed intermedia distinctiore, utrinque prædita, carina marginali acuta, reflexa; pedes breves, sub-validi, rugosuli; processus prosternalis dilatatus, apice modice emarginatus, sed angulis acutis dentiformibus. Long. 26 mm.; lat. 14 mm.

A very distinct species characterised by the elongate shape of the elytra which are very little attenuate behind.

Hab. Cape Colony (Knysna). Dr. F. Purcell.

The species hereafter described belong to the group of *Psammodes* (*Ocnodes*, Fahr.) *scrobicollis*, Fahr., characterised by oblong ovate elytra, short legs with the anterior tibiæ broad, sharply carinate and sinuate outwardly, and moderately slender antennæ.

The following table may help in distinguishing the species here described:—

C.—PROTHORACIS LATERA AD MEDIUM PERPARUM AMPLIATA.

Prothorax totus granosus, elytra minute crebreque granulata .. *myrmidon*.

Prothorax crebre minuteque strigillatus; elytra crebre sed vage punctulata *specularis*.

Prothorax punctato strigillatus; elytra creberrime atque minute granulosa *vagus*.

Prothorax elytraque confertim granulata; elytra opaca.. .. *verecundus*.

Prothorax elytraque creberrime granulata; elytra nitida *dubiosus*.

Prothorax crebre punctatus, lateribus scrobiculatis; elytra sat crebre punctata *verator*.

B.—PROTHORACIS LATERA ANTE MEDIUM AMPLIATA, VERSUS BASIM SENSIM ANGUSTATA, HAUD DEPLANATA.

Prothorax intra basim transversim impressus, confertim punctatus, disco bi-foveolatus *consors*.

Prothorax scrobiculatus, disci pars postica punctis distantibus adspersa; elytra antice punctis minutis adspersa *imitator*.

Prothorax crebre profundeque punctatus, lateribus granulatis; elytra crebre punctata *sperabilis*

Prothorax conferte punctulata, ad basim minus attenuatus; elytra crebre minuteque granulosa *congruens*.

Elytra haud granulosa *mendicus*.

A.—PROTHORACIS LATERA ANTE MEDIUM MAGIS AMPLIATA, SUB-DEPLANATA.

Prothorax in medio disci profunde punctatus, lateribus late rudeque granulatis; elytra subtiliter rugosa *licitus*.

Prothorax punctulatus, ad latera sub-rugosus; elytra vitta suturali lata; elytra laxè granulosa *similis*.

Prothorax elytraque sat crebre punctulata *dolosus*.

PSAMMODES MYRMIDON.

Niger, sub-nitidus; caput inter antennis transversim impressum, scrobiculatum; prothorax latitudine quarto longior, modice rotundato ampliatus, basi sub-sinuatus, angulis posticis rotundatis, anticis valde acutis prominulisque, supra convexus, antice paullo declivus, minute scabrosus, basi lateribusque distincte marginatis, intra basim breviter impressus; elytra ovalia, medio prothorace duplo latiora, supra convexa, postice modice declivia, granulis minutis crebre adpersa, margine laterali acuta, reflexa; pedes breves, validi, scabrosi, femoribus anticis sub-clavatis tibiisque ejusdem paris externe sinuatis; processus prosternalis dilatatus, triangulus, apice haud emarginatus. Long. 29 mm.; lat. 16 mm.

♂. Segm. abdom. 3 primis late fulvo tomentosus.

Shape and general facies of *P. scrobicollis*; the prothorax is more convex, a little less broad and distinctly declivous in the anterior part, and instead of being covered with deep and broad scrobiculate punctures, it is finely shagreened; the elytra instead of being nearly smooth, with a few minute granules scattered about, are covered with closely set and larger granules, and the apex of the pro-sternal process is not deeply emarginate in the centre as in *P. scrobicollis*.

Hab. Cape Colony (Prieska).

PSAMMODES SPECULARIS.

Niger, nitidus, palpis, antennis, tibiis tarsisque ferrugineis; caput antice rude punctatum, vertice paullum strigillatum; prothorax longitudine latitudine tertio latior, lateribus fere pone medium modice rotundato ampliatis, basi apice haud latior, angulis anticis acuminatis, prominulis, posticis sub-rotundatis, convexus, ad basim leviter depressus, totus marginatus, confertim strigillatus; elytra ovalia, antice prothorace basi nonnihil latiora, versus apicem sub-acuminata, medio prothorace tertio latiora, convexa, postice longe dehiscencia, margine laterali acuta, versus apicem sat reflexa, haud deplanata, punctis crebris, vagis, apice evanescentibus obsita; pedes rugosuli, breves, parce pubescentes. Long. 15 mm.; lat. 7 mm.

Hab. Mozambique (Rikatla). Rev. H. Junod.

PSAMMODES VERECUNDUS.

Niger, opacus, antennis tarsisque ferrugineis; caput minute

granulosum, palporum maxillarum articulo ultimo securiformi; prothorax parum rotundato-ampliatum, longitudine tertio latior, basi emarginatus angulis rotundatis, apice sub-sinuatus angulis acutis, valde prominulis, totus distincte marginatus, supra convexus, crebre distincteque granulosus, granulis elongatis; elytra antice latitudine baseos prothoracis, æqualia ad humeros ampliata, sub-ovalia, versus apicem acuminata, supra convexa, postice longe dehiscentia apiceque deplanata, crebre distincteque granulosa, granulis apice minimis et sparsis, margine laterali acuta, reflexa; pedes breves, rugosi, posticis intermediisque sub-gracilibus; antennæ graciles. Long. 15–24 mm.; lat. 8–13 mm.

♂. Abdom. segment. tribus vel quatuor basalibus in medio late ferrugineo tomentosis.

Easily recognised by the opaque colour of the upper side and the very distinct granulation of the prothorax and elytra; in the small examples from Namaqualand the posterior part of the elytra is more abruptly dehiscent than in larger specimens from Damaraland.

Hab. Cape Colony (Port Nolloth). L. Péringuey. Damaraland (Walvish Bay).

PSAMMODES DUBIOSUS.

Niger, nitidus, antennis tarsisque ferrugineis; caput antice rugose punctatum, postice granulatum; prothorax fere ut in specie præcedente, sed magis parallelus, supra granulis rotundatis nonnihil validioribus breviterque setiferis crebre obsitus; elytra ovalia, versus apicem acuminata, medio prothorace tertio latiora, convexa, longe dehiscentia, apice haud deplanata, margine laterali acuta, crebre distincteque granulosa, granulis brevissime setiferis; pedes breves, rugosi. Long. 19 mm.; lat. 10 mm.

♂. Pectore abdominisque segmentibus omnibus in medio fulvo tomentosis.

Distinguished from the preceding species mainly by the more rounded granules which are slightly wider apart on the prothorax, and more closely set on the elytra; they are also very briefly setigerous, and the marginal part of the apex is not depressed.

Hab. Damaraland (Angra Pequena).

PSAMMODES VEXATOR.

Brunneo niger, nitidus; antennis ferrugineis, crassiusculis; caput antice late rudeque punctatum, postice strigillatum; prothorax latitudine fere quarto longior, in medio paullum rotundato ampliatum,

apice leviter sinuatus, angulis anticis prominulis, posticis sub-rotundatis, basi recta, supra modice convexus, totus marginatus, in dorso crebre profundeque punctatus, ad latera late scrobiculatus, scrobis granulis minutissimis repletis; elytra ovalia, versus apicem attenuata, supra convexa, postice dehiscentia, apice haud deplanata, punctis sat crebris modice profundis adspersa, margine laterali acuta, reflexa; pedes breves rugosi. Long. 20 mm.; lat. 10 mm.

♂. Segm. abdom. tribus basalibus in medio late fulvo tomentosis.

This species is differentiated from the following by the shape of the elytra, which are narrower near the base; the prothorax is not so much amplified laterally and the punctures in the disk are more closely set and do not coalesce in the anterior part.

Hab. ? Zambesia.

PSAMMODES VAGUS.

Niger, sub-nitidus, palpis antennis tarsisque ferrugineis; caput rugose punctatum, inter antennis profunde transversim impressum; prothorax longitudine quarto latior, pone medium modice rotundato amplius, basi apice haud latior, sed angulis posticis distincte rotundatis, anticis acutis, valde prominulis, punctis elongatis creberrime obsitus, lateribus granulatis; elytra ovata, antice prothorace nonnihil, medio fere duplo latiora, convexa, postice longe dehiscentia, margine laterali acuta, reflexa, apice perparum deplanata, granulis minutis creberrime obsita; pedes breves, rugosuli, parce pubescentes. Long 15–21 mm.; lat. 8–11 mm.

♂. Segm. abdom. quatuor basalibus late fulvo tomentosis.

Hab. Cape Colony (Port Nolloth), L. Péringuey; (Garies) G. Alston.

PSAMMODES CONSORS.

Niger, nitidus, palpis antennis pedibusque piceis; caput antice profunde punctatus, punctis postice subtilioribus; prothorax longitudine tertio latior, ante medium rotundato-amplius, versus basim paullum attenuatus, basi apice haud angustior, angulis anticis acutis, prominulis, posticis sub-rotundatis, supra convexus, totus marginatus, punctis minutis creberrime obsitus, punctis ad latera distinctioribus, medio disci bi-foveatus, intra basim anguste depressus medioque minute bi-fossulatus; elytra ovalia, antice prothorace nonnihil latiora, versus apicem attenuata, supra convexa, postice modice dehiscentia, margine laterali acuta, reflexa, apice haud

deplanata, granulis minutissimis antice sat crebris, post medium evanescentibus, obsita; pedes breves, sub-validi, rugosi, tibiis parum pubescentibus. Long. 17 mm.; lat. 9 mm.

Easily distinguishable by the two shallow foveæ of the prothorax.

Hab. Transvaal (Rustenburg). Miss Schunke.

PSAMMODES IMITATOR.

Niger, nitidus, antennis pedibusque ferrugineis; caput crebre scrobiculatum; prothorax ante medium rotundato ampliatus, versus basim paillum attenuatus, longitudine tertio latior, basi apice haud angustior, angulis anticis validis, acutis, posticis sub-rotundatis, totus marginatus, supra convexus, punctatus, punctis postice haud confertis, ad latera scrobiculatus, scrobis granulis minutis repletis; elytra sub-ovalia, antice prothorace nonnihil, medio tertio latiora, convexa, modice dehiscentia, margine laterali acuta, valde reflexa, ad apicem haud deplanata, punctis minutis antice adspersa; pedes breves, sub-validi, rugosi, tibiis intermediis posticisque pubescentibus; processus prosternalis antice emarginatus. Long. 16-18 mm.; lat. 9-10 mm.

♂. Segm. abdom. tribus basalibus, etiam metathorace interdum, in medio late fulvo pubescentibus.

Evidently closely allied to *P. scrobicollis*, Fähr., and might prove to be only very small examples of that species.

Hab. Cape Colony (Vaal River). L. Péringuey.

PSAMMODES SPERABILIS.

Niger, nitidus, labro, palpis antennisque ferrugineis; capite antice rude profundeque punctatum, postice strigillatum; prothorax ut in *P. imitatore* sed versus basim nonnihil magis attenuatus, supra convexus, totus marginatus, supra-crebre distincteque punctatus, ad latera granulosus; elytra ovalia, antice prothorace paillum angustiora, medio fere duplo latiora, convexa, postice modice dehiscentia, margine laterali acuta, reflexa, apice nonnihil deplanata, punctis minutissimis brevissime setiferis crebre obsita. Long. 18 mm.; lat. 10 mm.

♂. Segm. abdom. tribus basalibus metathoraceque in medio fulvo tomentosis.

Differs from *P. imitator* in the sculpture of the prothorax, which is only punctate in the centre and granulose laterally; the elytra are

also a little more narrowed near the base, and the prosternal process is not emarginate.

Hab. Ovampoland (Omarramba). A. W. Eriksson.

PSAMMODES CONGRUENS.

Niger, sub-opacus, antennis, palpis pedibusque rufo piceis; capite antice profunde punctato, vertice sub-strigillato; prothorax fere ad medium rotundato ampliatus, basi apiceque leviter sinuatus, angulis anticis acutis prominulis, posticis sub-rotundatis, convexus, totus marginatus, margine laterali sub-serrulata, punctis minutis confertim obsitus, lateribus leviter scrobiculato-rugosis; elytra ovalia, versus apicem paullum attenuata, antice prothorace nonnihil angustiora, medio tertio latiora, convexa, postice modice dehiscentia, margine laterali acuta, reflexa, apice haud deplanata, antice crebre minuteque granulosa, granulis post medium oblitteratis; pedes breves, rugosuli, parum pubescentes. Long. 14 mm.; lat. 7 mm.

Hab. Bechuanaland (Ramoutsa). Rev. J. A. O'Neil.

PSAMMODES MENDICUS.

Nigro brunneus, nitidus, palpis, antennis tarsisque piceo-rufis, elytra vitta suturali rufescente; caput antice profunde punctatum, vertice rude strigillatum; prothorax longitudine latitudine fere adæquans, antice modice rotundato ampliatus, versus basim evidenter attenuatus sed basi apice latitudine æqualis, angulis anticis acutis, haud prominulis, posticis sub-rotundatis, convexus, totus marginatus, punctis sat minutis crebre obsitus, ad latera densioribus; elytra ovata, convexa, postice modice dehiscentia, antice latitudine baseos thoracis, medio prothorace tertio latior, tota levia, margine laterali acuta, leviter reflexa, apice haud deplanata; pedes breves, sub-validi, parum pubescentes. Long. 12-13 mm.; lat. 6-7 mm.

The prothorax is more attenuate laterally towards the base than in any of the closely allied species.

Hab. Ovampoland (Umbe, Okovango River). A. W. Eriksson.

PSAMMODES LICITUS.

Brunneo niger, sub-opacus, palpis, antennis, tibiis tarsisque ferrugineis; caput rude profundeque punctatum; prothorax longitudine fere duplo latior, ante medium valde rotundato

ampliatius, pone medium diagonaliter attenuatus, basi apice nonnihil latior, angulis posticis rectis, anticis valde prominulis, parum convexus, lateribus deflexis, leviter marginatus, in medio disci profunde crebreque punctatus, ad latera late sed minute scrobiculatus; elytra antice latitudine prothoracis, late ovalia, medio prothorace quarto latiora, versus leviter attenuata, modice rotundata, supra convexa, postice dehiscentia, margine laterali acuta distincte reflexa, postice haud deplanata, rugosula, granulis minimis nonnullis adspersa, costulis vix distinctis utrimque prædita, sutura vage rufescente; pedes breves, rugosuli, parce pubescentes. Long. 15-18 mm.; lat. 9-11½ mm.

In this species the prothorax is more amplified laterally than in any other species of this group.

Hab. Zambesia; Buluwayo (F. C. Selous); between the Limpopo and Zambesi Rivers (T. Ayres).

PSAMMODES SIMILIS.

Niger, sub-nitidus, antennis tarsisque ferrugineis; caput antice late, vertice minute punctatum; prothorax longitudine tertio latior, ante medium rotundato ampliatius, pone medium diagonaliter attenuatus, basi apice nonnihil latior, angulis posticis fere rectis, anticis acutis, prominulis, antice lateraliterque marginatus, dorso modice convexus lateribus sub-deplanatis, crebre minuteque punctatus, ad latera rugosus; elytra ovalia, prothoracis basi latitudine æqualia, medio parum ampliata, versus apicem modice attenuata, margine laterali acuta, vix reflexa, apice haud deplanata, supra convexa, postice sat longe dehiscentia; sat crebre minute granulata, vitta suturali sat lata, distincta, sanguinea; pedes breves, rugosuli, vix pubescentes.

♂. Segm. abdom. tribus basalibus in medio late fulvo tomentosis.

Hab. Zambesia (Salisbury, Mesahi River). G. A. K. Marshall.

Differs from the preceding in the shape of the prothorax, which is not quite as much amplified before the median part, the punctures on the median part are not so deep nor quite as broad, and the sides are rugose rather than scrobiculate; the elytra are more elongate and not so wide, the sutural band is also more distinct.

PSAMMODES DOLOSUS.

Niger, nitidus, antennis, palpis tarsisque ferrugineis; caput crebre rudeque punctatum; prothorax longitudine fere duplo latior, apice

sensim sinuatus, totus marginatus, sed parte antica laterum magis acuta, basi apice haud latior, angulis posticis rotundatis, convexus, crebre punctatus, punctis lateralibus vix magis distinctis; elytra antice prothorace nonnihil latiora, medio perparum ampliata, prothorace tertio latiora, margine laterali acuta, reflexa, apice haud deplanata, supra convexa, postice modice dehiscencia, punctis minutissimis, crebris tota obsita; pedes breves, rugosuli, fere glabri. Long. 15 mm.; lat. 10 mm.

Hab. Transvaal (Potchefstroom). T. Ayres.

PSAMMODES INQUINATUS.

Niger, indumento terreno supra dense vestitus, confertim pilosus, pilis brevibus, erectis, subtus breviter pubescens; articulis antennarum duobus ultimis, palpis tarsisque ferrugineis; prothorax longitudine duplo latior, rotundato ampliatus, ad medium laterum angulatus, basi apice nonnihil latior, angulis anticis sub-prominulis, posticis rotundatis, supra modice convexus, pilis brevibus densis, erectis, indumento fere occultis, vestitus; elytra basi prothorace nonnihil, medio tertio latiora, versus apicem modice acuminata, dorso antice nonnihil deplanata postice breviter dehiscencia, apice haud deplanata, pilis brevibus erectis indumentum excedentibus confertim seriatis, seriebus approximatis, dense vestita; subtus breviter griseo-pubescens abdomen valde convexum; pedes breves, setosi, sub-validi, tibiis anticis calcaribus longis acutis. Long. 11 mm.; lat. 7 mm.

♂. Abdom. segm. quatuor basalibus latissime brunneo pubescentibus.

This species, and also the following, differ somewhat in general appearance from the other South African *Psammodes*. The antennæ and also the spurs of the fore tibiæ are as in *Ocnodes*, Fahr., but in the ♂ the abdomen is more convex.

Hab. Zambesia (? Victoria Falls).

PSAMMODES FORTUITUS.

Niger, opacus, nonnunquam indumento fusco supra obtectus, pilis griseis dense vestitus; antennis, palpis pedibusque ferrugineis; caput ut in *P. inquinato*; prothorax longitudine duplo latior, ad medium laterum rotundato ampliatus, basi nonnihil sinuatus, apice basi nonnihil angustior angulis anticis sub-prominulis, posticis rotundatis, totus marginatus, marginibus laterum reflexis, crebre punctulatus, pilis griseis brevibus sub-decumbentibus, sed intra mar-

ginem lateralem longioribus atque rigidioribus, sat dense adpersus, supra modice convexus; elytra ovalia, apice acuminata, antice prothorace nonnihil angustiora, medio quarto latiora, supra convexa, sutura leviter depressa, postice longe dehiscencia, apice haud deplanata, crebre punctulata pilisque rigidis griseis seriatis dense vestita; pedes corpusque subtus ut in *P. inquinato*. Long. 8 mm.; lat. $4-4\frac{1}{4}$ mm.

♂. Abdom. segment. quatuor basalibus latissime brunneo pubescentibus.

Smaller than the preceding, and with the elytra more ovate and more acuminate at tip. In some examples the upper part is covered with the same indumentum as in *P. inquinatus*.

Hab. Ovampoland. A. W. Eriksson.

OGRABIES, nov. gen.

Mentum sub-trapeziforme; palpi maxillares articulo ultimo late securiformi; labrum transversum; epistoma capite vix angustius, marginatum, nonnihil reflexum a capite linea arcuata disjunctum; oculi sub-prominuli; antennæ breves, prothoracis basim haud attingentes, articulis 5-8 turbinatis, 9-10 monilibus, æqualibus, 11 præcedenti haud latiore sed dimidio longiore, sub-moniliformi; thorax elytris contiguus, apice basique sinuatus lateribus anticis haud prominulis, posticis rotundatis, longitudine duplo latior; scutellum breve, acutum; elytra elongato ovalia, basi prothorace nonnihil latiora, convexa, postice dehiscencia, apice attenuata; epipleura angustissima, apice ampliata; sternum ut in *Psammode*; pedes breves, femoribus apice canaliculatis, femoribus anticis intermediisque compressis, laminatis, apice dilatatis, anticis externe valde sinuatis, interne longe pilosis; tarsi omnes infra longe pilosi.

A *Psammode* præcipue differt articulo ultimo palporum maxillarum valde securiformi, articulis ultimis antennarum monilibus, tibiis anticis intermediisque laminatis, apice dilatatis tarsisque infra longe pilosis.

OGRABIES SINGULARIS.

Caput, prothorax pedesque brunneo-rufescentes, nitidi; elytra nitida, flava fere pelucida; caput laxè punctulatum, antice profunde impressum, epistoma vix attenuatum, longitudine fere triplo latius, antice sinuatum a capite linea arcuata disjunctum; antennarum articuli quatuor ultimi flavescens; prothorax longi-

tudine duplo latior, antice posticeque sinuatus, angulis anticis haud prominulis, lateraliter modice rotundatus, ad basim perparum ampliatus, basi apice nonnihil latior, lateribus late rotundatis, distincte marginatus, sub-depressus; scutellum triangulum; elytra antice prothorace nonnihil latiora, triplo longiora, elongato-ovata, medio prothorace fere duplo latiora, convexa, postice longe dehiscentia, margine laterali tenui, apice haud deplanata, vage striata, striis angustis laxissime punctulatis, interstitiis fere levibus; corpus subtus brunneum, pectus punctulatum, pilosum, abdomen leve, glabrum; pedes breves fere haud punctulati, interne pilosi; tarsi sat longi, infra longe pilosi. Long. $11\frac{1}{2}$ mm.; lat. 6 mm.

Hab. The sandy shores of Namaqualand (Port Nolloth, Ograbies). L. Péringuey.

GEN. HYPOMELUS, Solier.

Solier has made two divisions in this genus which has not been generally accepted, but by restricting it to the species which present the characteristics given here, and which he included in his first division, they form a very homogeneous and distinct genus characterised as follows:—

Mentum ut in *Psammode*, palpi crassiusculi, articulo maxillare ultimo late securiformi; antennæ graciles, articulis elongatis, 9–10 magis minusque conicis, ultimo ovato, acuminato; oculi supra valde prominentes; prothorax lateribus reflexis, angulis posticis retrorsum productis; elytra elongata, costulata, apice singulatim acuminata, abdominis segmentis maris in medio haud tomentosis; pedes modice elongati.

The type of the genus is *H. sabulosus*, Sol.

HYPOMELUS SERVUS.

Niger, pilis cinereis brevibus adpersus, palpis antennisque piceo-rufescentibus, his pilosulis; caput depressum, inter antennas profunde impressum, crebre punctulatum; prothorax basi apiceque latitudine fere adæquans, lateribus in medio sub-angulatis, margine laterali obliqua, recta, postica sub-sinuata, angulis posticis retrorsum productis, intra marginem basis transverse impressus, supra fere planus, marginibus reflexis, crebre punctulatus, brevissime pubescens; elytra humeris obliquis, valde reflexis, pone humeros sinuata, deinde oblonga, postice obtuse attenuata, supra convexa, sutura modice elevata costisque tribus, interiore breviora, ante apicem abbreviatis

utrinque prædita, margine laterali carinata, interstitiis parce pubescentibus, costis apiceque longius pilosis; pedes sub-graciles, modice elongati, pubescentes. Long. 13–15 mm; lat. 6–7 mm.

The shape of the prothorax is not unlike that of *P. flagrans*, but it is a little less aculeate laterally in the middle; the outer posterior margins are less recurved, and the basal one less arcuate; the elytra are not villose, and the costæ are very distinct. It is generally covered with an earthy indumentum, and is on the whole closely allied to *H. sabulosus*, Sol.

Hab. Cape Colony (Graham's Town, Somerset East, East London).

HYPOMELUS PLAUSIBILIS.

Niger, opacus; supra fere glaber; antennæ, palpi pedibusque rufescentibus; caput epistomaque scrobiculata, hoc deflexum, antice profunde transversim impressum, oculi convexi, prominentes; prothorax apice basique sinuatus, lateribus in medio sub-angulatum dilatatis, latitudine maxima duplo brevior, sub-depressus, marginibus laterum acutis valdeque reflexis, plicis brevibus longitudinalibus confertim obsitus, medio linea longitudinali evanescente; elytra basi prothoracis latitudine maxima latiora, deinde vix ampliata, postice modice angustata, sub-convexa, postice deflexa, sutura parum elevata, costa dorsali carinata apicem haud attingente costisque duabus interstitialibus humilioribus post medium evanescentibus utrinque prædita, margine laterali acuta ad humeros valde reflexa, interstitiis vage rugulosis granulisque sub-setiferis aliquot adspersis; pedes modice elongati, tibiis posticis sinuatis; corpus subtus brevissime pilosum. Long. 17 mm.; lat. 9 mm.

Hab. Cape Colony (Ceres). Dr. W. F. Purcell.

A distinct species which cannot be compared with any other.

HYPOMELUS FLAGRANS,

Plate VI., fig. 12.

Niger, supra longe pilosa pubeque terrena vestita; caput depressum, ab epistoma haud disjunctum, rugosum; oculi prominentes; antennæ graciles, articulis longe pilosis; prothorax apice posticeque arcuatum sinuatus, ab apice ad medium diagonaliter productus, deinde ad basim attenuatus, ubi apice fere duplo latior, lateribus acutis, anticis fere rectis, posticis sub-sinuatis, valde reflexis angulis basis retrorsum productis, apice rotundatis; elytra humeris obliquis, ab humeros apice fere oblonga, medio prothorace dimidio latiora, apice

singulatim aculeata, modice divaricata, longe irregulariterque serrata, supra convexa, rude profundèque punctata, sutura elevata margineque laterali valde reflexa, costulis duabus e pilis pubeque densioribus formatis in singulo instructa; pedes elongati, breviter sed dense pilosi; corpus subtus punctulatum, tenuiter terreno pubescens. Long. 18 mm.; lat. 8 mm.

This species is easily distinguishable owing to the thick, earthy pubescence and long villose hairs, which cover the whole upper part and which form on the elytra two distinct costæ on each side of the disk; the sutural part of the apex is deeply incised but not divaricate, and has on each side five outer distinct short teeth.

Hab. ? Cape Colony.

PSAMMODOPHYSIS, nov. gen.

Cum descriptione gen. *Psammodes* in plurimis convenit sed differt antennis gracilioribus magisque pubescentibus, oculis valde prominentibus, articuloque ultimo palporum maxillarum sub-cylindrico, apice truncato, haud securiformi; pedes graciles, elongati, tibiis postices flexis.

Psammodes longicornis, Kirb., must also be included in this genus.

PSAMMODOPHYSIS PROBES.

Niger, sub-opacus; antennis, palpis, labro pedibusque rufescentibus; caput depressum, fronte rugosula, ab epistoma haud disjuncta, illo punctulato; prothorax ante medium rotundato amplius, antice truncatus angulis acuminato-productis, basi fere rectus in medio longitudine fere duplo latior, supra parum convexus subtiliter coriaceus, lateribus sub-depressis margineque laterali antica distincte reflexa; elytra antice thoracis basi haud latiora, humeris obliquis, pone humeros haud sensim ampliata, at medio illo tertio latiora, supra convexa, subtiliter granulata, sutura elevata costisque tribus sub-elevatis, apicem haud attingentibus, utrinque prædita, margine laterali acute carinata atque ad humeros recurva, epipleura levia; palpi maxillares articulo ultimo truncato, haud securiformi. Long. 21 mm.; lat. 10 mm.

Hab. Cape Colony (Little Namaqualand). G. Alston.

TRACHYNOTIDUS, nov. gen.

Trachynoto similis, ab eo præcipue differt segmentis abdominis

maris in medio pubescentibus; caput modice deflexum; oculi reniformes, prominuli; palpi maxillares articulo ultimo triangulo, antennæ graciles, articulo 3^o duobus sequentibus simul sumtis longiore, 4^o–7^o longitudine sub-æqualibus, 3^o–10^o obconicis, 11^o ovato; prothorax elytris dimidio angustior, basi fere recta, angulis postice sub-acute productis; elytra elongata, ad medium ampliata, postice acuminata, supra granulosa; pedes graciles, longi, tibiis posticis sinuatis. Mas.: abdominis segmentis basalibus tribus in medio tomentosus.

Hardly different in shape from some species of *Trachynotus*, but in the ♂ the three, and sometimes also the fourth, abdominal segments are clothed in the centre with a brownish pubescence not quite so thick or so distinct as in *Psammodes*; in *Trachynotus* there is no such pubescence. The eyes are also more prominent.

The types of the genus are *T. (Psammodes) thoreyi*, Haag, and *T. (Clinocranion) alstoni*, Pér.

TRACHYNOTIDUS MANIFESTUS.

Niger, opacus, elytrorum sutura, carina discoidali, vittis duabus margineque laterali rufescentibus; caput inter antennis profunde impressum, crebre minuteque granulatum; prothorax angustus, ante medium sub-angulatim dilatatus, longitudine quarto latior, crebre granulatus; elytra elongata, humeris obliquis, ad humeros prothoracis latitudine maxima fere duplo latiora, in medio ampliata ubique basi duplo latiora, deinde acuminata, supra convexa, granulis distinctis adspersa, carina discoidali valida, apicem haud attingente in singulo prædita, sutura haud elevata, margine laterali acuta; pedes longi, graciles. Long. 17–20 mm.; lat. 7–9½ mm.

In shape and size this species is closely allied to *T. (Clinocranion) alstoni*, but the granules of the prothorax and elytra are very much smaller, and hardly distinct in comparison.

Hab. Cape Colony (Namaqualand). G. Alston.

TRACHYNOTIDUS COGNATUS.

Niger, opacus, caput inter antennis profunde impressum, crebre, minute granulatum; prothorax longitudine fere quarto latior, ad medium valde angulatim dilatatus, lateribus anticis fere rectis, posticis sinuatis, supra parum convexus, intra basim leviter transversim impressus, crebre granulatus; elytra ut in *T. manifesto*, carina discoidali acuta sub-ferruginea, apicem haud attingente, in

singulo prædita, sutura haud elevata, margine laterali acuta; pedes longi, graciles. Long. 19 mm.; lat. $9\frac{1}{2}$ mm.

Closely allied to the preceding species, but distinguishable by the much broader and more hexagonal prothorax; the elytra are of the same shape and sculpture, but there is hardly any trace of the two reddish lines on each side of the discoidal carina.

Hab. Bechuanaland (Taungs). G. Alston.

TRACHYNOTIDUS EXIMIUS.

Niger, opacus, prothoracis margine laterali, costis margineque elytrorum ferrugineo rufescentibus; caput prothoraceque crebre profunde atque rugose punctati; hic ampliatus in medio sub-angulatim dilatatus, longitudine tertio latior; elytra pone humeros modice ampliata, in medio basi tertio latiora, versus apicem acuminata, supra depressa postice convexa decliviaque, granulis minutis crebre obsita; costis tribus parum elevatis apicem haud attingentibus utrinque prædita, sutura haud elevata. Long. 19–21 mm.; lat. 8–10 mm.

The prothorax is as broad as in the preceding species, but it is not so angular in the middle, and the lateral margin is not at all sinuate in the posterior part; the elytra are depressed in the central part for a short distance from the suture, and instead of there being a sharp carina on each side, there are three blunt, moderately broad, ferruginous raised lines which cease before reaching the posterior declivity; the surface is covered with sparse and minute granules.

Hab. Cape Colony (Calvinia, O'Kiep). L. Péringuey.

GEN. TRACHYNOTUS, Latr.

TRACHYNOTUS NITENS.

Æneus, nitidus, prothorace elytrisque glabris, labrum pilosum, caput inter antennis transversim profunde impressum, deflexum, vertice punctulatum, oculi ovati, distincte emarginati; prothorax ad medium angulatim dilatatus, longitudine dimidio latior, basi apiceque truncatus, supra parum convexus, lateribus tenuiter marginatis, crebre punctulatis, disco levi; elytra elongata, antice basi thoracis haud sensim latiora pone humeros modice ampliata, medio prothorace dimidio latiora, et triplo longiora, deinde versus apicem valde acuminata, modice convexa, sutura usque ad apicem elevata costisque duabus utrinque prædita, exteriori distincte carinata,

apicem haud attingente, interiore humiliore and brevior, margine laterali reflexa, carinata; rudimento costæ tertiæ a medio ad apicem magis conspicuo; epipleura angusta, canaliculata, fere levia; pectus prosternumque griseo pilosa, pedes elongati, graciles, tibiis posticis sinuatis. Long. 16–17 mm.; lat. 6–7 mm.

Hab. Cape Colony (Garies). M. Schlechter.

A very distinct species but not unlike in general facies *T. acuminatus*.

TRACHYNOTUS HAAGI,

Plate VI., fig. 18.

Niger, opacus, elytris sub-nitidis, prothorace elytrisque glabris; caput deflexum, inter antennas profunde transversim impressum, sparse punctulatum, epistoma labrumque pilosa, oculi magni, antice emarginati; prothorax ab apice ante medium dilatatus, postice leviter attenuatus, apice basique truncatus, latitudine maxima dimidio brevior, supra parum convexus marginibus acutis a medio reflexis, confertim punctulatus, disco in medio, linea brevi impresso; elytra elongata, humeris sub-rotundatis, medio prothorace vix dimidio latiora, fere triplo longiora, postice valde acuminata, supra vix convexa, carina suturali integra costaque discoidali fere apicem attingente acute elevatis, margine laterali acuta, reflexa, interstitiis granulis acutis irregulariter tri-seriatis obsitis; corpus subtus griseo pilosum; pedes elongati, graciles, pubescentes, tibiis posticis sinuatis. Long. 16 mm.; lat. 7 mm.

Hab. Cape Colony (Pella). G. Alston.

I do not know of any other species to which *T. haagi* could be compared.

TRACHYNOTUS ADVENTITUS.

Niger, sub-opacus, glaber; caput punctulatum, deflexum, antice profunde transversim impressum, medio leviter sulcatum; prothorax apice basique truncatus, lateribus rotundato ampliatis, latitudine maxima fere duplo brevior, supra parum convexus, crebre aciculatus; lateribus haud deplanatis, marginatis, medio obsolete canaliculato; elytra elongata, antice prothoracis basi haud latiora, pone humeros ampliata, medio prothoracis latitudine maxima dimidio (♂) vel triplo (♀) latiora, fere triplo longiora, postice modice acuminata, granulis acutis sat confertim obsita, carina suturali apicem attingente alteraque discoidali ante apicem abbreviata, in singulo prædita; margine laterali acuta, reflexa; epipleura lævia, in medio canaliculata;

corpus subtus brevissime pilosum; pedes elongati, tenues, pubescentes, tibiis posticis sinuatis. Long. 16–18 mm.; lat. 7–9 mm.

Hab. Cape Colony (Garies). M. Schlechter.

Not unlike in general facies *T. Wahlbergi*, Haag., but the prothorax is not so sharply aculeate laterally, nor so much shagreened, and the intervals on the elytra are granulose instead of being roughly scrobiculate.

TRACHYNOTUS RUSTICUS.

Niger, opacus, glaber; caput crebre sed haud profunde punctulatum; prothorax basi apiceque truncatus, medio sub-angulatum dilatatus, fere hexagonus, longitudine quarto latior, parum convexus, crebre punctulatus, intra basim obsolete transversim impressus, linea longitudinali media apice posticeque abbreviata; elytra elongato ovata, basi prothorace nonnihil angustiora, medio ampliata, ubi prothorace duplo latiora, versus apicem acuminata, supra modice convexa, crebre granulata, sutura elevata, præter carinam lateralem, reflexam, costis sub-acutis discoidalibus duabus alteraque externali vix distincta apicem haud attingentibus in singulo prædita; subtus brevissime pubescens; pedes sat graciles, brevissime pubescentes. Long. 13–14 mm.; lat. 6–7 mm.

Somewhat of the same shape as *T. acuminatus*, Queens., but with more ovate elytra, also acuminate behind, but a little more convex and with less sharp dorsal carinæ.

Hab. Cape Colony (Malmesbury). R. M. Lightfoot.

TRACHYNOTUS PLICIPENNIS.

Niger, sub-nitidus, pube brevissima terrena vestitus; caput crebre aciculatum, parum deflexum, in medio longe sulcatum, inter-antennas profunde transversim impressum, epistoma labroque longius pilosa, oculi ovati, antice profunde emarginati; prothorax aciculatus, a parte tertia usque ad basim rotundato ampliatus, antice leviter attenuatus, truncatus, basi in medio truncata angulis retrorsum productis, parum convexus, lateribus sub-declivis margineque laterum acuta, haud reflexa, intra basim profunde transversim impressus; elytra a basi prope medium leviter ampliata, deinde attenuata, apice haud acuminata, in medio prothoracis latitudine maxima magis quam tertio latiora, supra modice convexa, sutura elevata, costis duabus, interiore breviora, apicem haud attingentibus margineque laterali carinatis in singulo prædita, interstitiis reticulatis; corpus subtus breviter griseo-

tomentosum ; pedes breviores, pubescentes. Long. 19–22 mm. ; lat. 10–11 mm.

A distinct species, belonging to the group of *T. pilosus*, Haag ; *T. silphoides*, Fähr. ; *T. levis*, Fähr., &c. The elytra, however, are more elongate, although equally broad, and not at all acuminate behind, and the intervals have a very distinct reticulation, less marked, however, in the female than in the male : in the former sex the two dorsal costæ unite at about two-thirds of the length, and are prolonged a little further as a single raised line, while in the male the inner one is much the shorter of the two.

Hab. Transvaal (Middelburg, Barberton, Leydenburg).

TRACHYNOTUS LUTULENTUS.

Niger, opacus, pube densa ochracea vestitus ; caput sub-deflexum, inter antennis haud profunde impressum, oculi elongati, emarginati ; prothorax latus, hexagonus, apice sub-truncatus, basi leviter emarginatus, marginibus laterum acutis sed haud reflexis, supra parum convexus, intra basim profunde transversim impressus ; elytra basi prothoracis latitudine maxima latiora, triplo longiora, deinde vix ampliata, postice modice angustata, sub-convexa, post medium deflexa, præter suturam angustam vix elevatam, costa dorsali, humili, post medium evanescente costulaque undosa, obsoleta, utrinque prædita, margine laterali acuta, ad humeros valde reflexa, interstitiis aciculatis, tomentosis ; pedes sub-elongati, pubescentes ; corpus subtus punctulatum brevissime pilosum. Long. $11\frac{1}{2}$ mm. ; lat. 7 mm.

Hab. Transvaal (Leydenburg). T. Ayres.

Allied to *T. funestus*, Fähr., but more massive ; the upper part of the body is covered with a similar ochreous, extremely short pubescence ; the prothorax is of the same shape but broader, and has a deep basal transverse impression reaching nearly from side to side, the elytra are not so acuminate and have a wavy ridge between the dorsal carina and the outer margin which is not noticeable in *T. funestus*.

TRACHYNOTUS TANTILLUS.

Niger, opacus ; prothorax breviter griseo-pubescent ; elytris pilis brevissimis sub-erectis dense obtectis ; caput crebre punctulatum ; prothorax longitudine tertio latior, apicem versus angustatus, pone medium late rotundato ampliatus, basi leviter sinuatus, angulis anticis posticisque rectis, parum convexus, margine laterali acuta ; elytra

basi utrinque sinuata, antice prothorace distincte latiora, magis quam duplo longiora, medio fere latitudine baseos æqualia, pone medium versus apicem modice attenuata, supra antice nonnihil convexa, ad latera baseos utroque impressa, margine laterali acuta, ad humeros distincte reflexa, dorso utrinque vagissime tri-costato; subtus tenuissime griseo-pubescent; pedes sub-graciles, breves, tenuiter griseo-pubescentes. Long. $10\frac{1}{4}$ mm.; lat. $5\frac{1}{4}$ mm.

Hab. Transvaal (Potchefstroom). T. Ayres.

TRACHYNOTUS MERACUS.

Niger, opacus; caput sat crebre punctulatum, antice breviter griseo-pubescent; antennæ griseo pubescentes; prothorax longitudine tertio latior, apice basique fere truncatus, ad medium laterum distincte angulatim ampliatus, basi apice haud latior, angulis posticis nonnihil retrorsum prominulis, supra modice convexus, intra basim ad latera utrinque impressus, subtilissime punctulatus, impressionibus posticis griseo tomentosis; elytra oblongo-ovalia, antice prothorace basi haud latiora, humeris oblique rotundatis, medio prothorace quarto latiora, fere triplo longiora, versus apicem sub-acuminata, sutura elevata præterea, carina laterali costisque acutis tribus, interiore brevior, secunda carinata cæterisque magis conspicua in singulo prædita, superficie vix rugosula, vitta angusta pubescente juxta suturali, alteraque lata, supra laterali griseo-albidis; subtus pedesque dense sed breviter griseo-pubescentes. Long. 13 mm.; lat. 6 mm.

The nearest ally of this species is *T. dubius*, Pér., but it differs in the shape of the prothorax, which is distinctly angular laterally in the middle; the pubescence on the elytra is also of a different pattern.

Hab. Cape Colony (Clanwilliam). C. L. Leipoldt.

GEN. ECHINOTUS, Sol.

ECHINOTUS DISPAR.

Niger, indumento terreno-ochraceo dense obtectus; caput vertice deplanatum, rugosum; antennæ breviter pubescentes; prothorax vix latior quam longior, rotundato-ampliatus, basi apice perparum latior, angulis posticis acutis, retrorsum prominulis, margine laterali serrulata, supra gibbosus, callis duobus validis acute granulatis in medio instructis, parte antica apicis callosa, granulata, parte postica

carinula brevissima in medio instructa, basi ipsa transversim impressa, margine crassa, recurva; elytra humeris valde obliquis, pone humeros prothorace duplo latiora, deinde longe post medium parallela, ubi versus apicem acuminata, supra sat convexa, postice sat longe dehiscentia, sutura elevata præterea, carina laterali acuta postice serrulata, medium declivitatis attingente carinisque duabus discoidalibus longe ante apicem cohærentibus atque in lineam acutam cum carina laterali connexam continuatis in singulo prædita, interstitiis late clathratis; subtus pedesque dense ochraceo pubescentes. Long. 14 mm.; lat. 7 mm.

Hab. ? Zambesia.

Very distinct from *E. spinicollis*, Sol.

TRIBE OPATRINI.

GEN. ANOMALIPUS, Guér.

ANOMALIPUS AGRESTIS.

Niger, nitidus, interstitiis elytrorum punctisque prothoracis squamis terrenis vel griseis repletis; caput antice sub-rotundatum, in medio distincte excisum; prothorax longitudine duplo latior, valde rotundato-amplius, apice in circulum emarginatus angulis anticis acutis, lateribus deplanato marginatis, basi apice quarto latior, angulis posticis retrorsum acute productis, supra parum convexus, punctis profundis, interstitiis in medio disci areolas irregulares formantibus, sat dense obsitus; elytra antice prothoracis basi haud latiora, ab humeros pone medium nonnihil ampliata, ubi vix quarto latiora, in dorso deplanata, postice distincte inflexa, fere verticalia, sutura elevata costisque sub-glabris tribus nonnihil carinatis, præter carinam lateralem in singulo prædita, interstitiis utroque minute granulatis tuberculisque parum elevatis, sub-rotundatis costam breviorē fere formantibus in medio seriatis; pedes sat robusti, tibiis anticis simplicibus, externe bi-dentatis ♀. Long. 25 mm.; lat. 15 mm.

Belongs to the same group as *A. mastodon*, and *urus*, Fähr., and also *dentipes*, Fabric. It approximates more the former in general facies, but is easily recognised by the coarser and more irregular punctuation of the prothorax; the interstitial costa on the elytra is not as carinate as in *A. dentipes*, and consists more of a series of somewhat closely set rounded tubercles.

Hab. Transvaal (Heidelberg). H. Bottomley.

ANOMALIPUS TURPIS.

Niger, indumento terreno nonnunquam vestitus; caput crebre profundeque punctatum, antice profunde excisum; prothorax longitudine fere duplo latior, valde rotundato ampliatus, lateribus deflexus, ad basim incisus, angulis posticis acutis a incisura longe retrorsum ductis, apice in circulum emarginatus, basi apice fere duplo latior, leviter bi-sinuatus, supra nonnihil convexus, crebre angusteque scrobiculatus, circa medium disci areolis parvis duabus notatus, intra basim ad angulos utrinque leviter impressus; elytra antice prothoracis baseos haud latiora, pone humeros parum ampliata, prothorace duplo longiora, in medio haud latiora, supra deplanata, postice distincte inflexa, rotundata, fere verticalia, sutura carinaque laterali acutis, carinisque granulosis, alternis magis elevatis, minoribus tuberculis minutis sat distantibus, utroque seriatis, prædita; corpus subtus nitidum; pedes validi, rugosi, tibiis anticis ♂ apice interne mucronatisdenteque valida sub-perpendiculari inferne armatis, extus valide bi-dentatis, intermediis posticisque leviter inflexis, supra haud profunde canaliculatis, illis extus bi-dentatis. Long. 20 mm.; lat. 11–12 mm.

This species belongs to the same group as *A. (Acmaeus) elephas*, *lineatus*, *podagricus*, &c.; it is allied to *A. plebeius*, Pér. (Trans. Lond. Entom. Soc., 1896, p. 169), but in this species the prothorax is not scrobiculate, the posterior angles are much shorter, and the costæ on the elytra are carinate, smooth, and all of equal height instead of being verrucose with the alternate ones very distinctly higher than the others; the anterior tibiæ are provided with a similar sub-perpendicular tooth, but in *A. turpis* there is no trace of the broad inward groove.

Hab. Zambesia (Zambesi Falls), Dr. Bradshaw; Ovampoland, A. W. Eriksson.

TRIBE TENEBRIONINI.

GEN. NYCTEROPUS, Casteln.

NYCTEROPUS CAPENSIS,

Plate VII., fig. 7.

Niger, capite prothoraceque sub-opacis; palpis, antennis tarsisque rufo-piceis; caput minutissime punctulato-rugosum, inter antennis transversim tenuiter impressum; prothorax apice basique truncatus,

latitudine quarto longior, lateribus vix ampliatis, fere linearibus, ad basim leviter sinuatus, angulis posticis anticis magis acutis, lateribus basique distincte marginatis; elytra elongata, prothorace basi vix latiora et sesqui longiora, a medio versus apicem attenuata, convexa, in medio disci vage punctato-seriata, seriebus ad latera posticeque evanescentibus; alis nullis; subtus pedesque nigri, fere leves. Long. 13 mm.; lat. 4 mm.

This genus was hitherto known from Madagascar only.

Hab Cape Colony (Knysna). Dr. W. F. Purcell.

TRIBE HELOPININI.

GEN. MICRANTEREUS, Sol.

MICRANTEREUS VALIDUS,

Plate VII., figs. 11 ♂, 6 ♀.

Niger, nitidus, glaber, elytris ♂ atris, ♀ rufescentibus; caput punctulatum, antice distincte late impressum, crebre sed laxè punctulatum; prothorax rotundato ampliatus, basi apiceque vix emarginatus, angulis anticis prominulis, posticis fere nullis, totus marginatus, supra modice convexus, crebre sed haud profunde punctulatus; scutellum breve; elytra ♂ elongata, prothorace basi vix latiora et fere quadruplo longiora, pone medium tertio latiora, modice convexa, postice sublonge dehiscencia, ♀ a basi ultra medium ampliata, ubi prothorace duplo latiora, supra insigniter convexa, rotundata apiceque declivia, margine laterali ante apicem acuta, apice modice deplanata, lateribus fere verticalibus, in dorso carinis tribus, in mare fere levibus, in femina sub-tuberculosis, utroque prædita, carinis duabus discoidalibus antice longe oblitteratis, interiore brevior, exterior basim apicemque attingente, a basi ultra medium utroque irregulariter tuberculosa, sutura postice elevata; corpus subtus nigrum, nitidum, pectore parce pilosum; pedes validi, rugoso-punctati, tenuissime pubescentes; femoribus ♂ infra longe fulvo ciliatis, tibiis intermediis inferne sinuatis, pone basim fere dentatis. Long. 22–24 mm.; lat. 12–13½ mm.

The male is a very distinct species.

Hab. Zambesia (Buluwayo). F. C. Selous.

MICRANTEREUS SPISSUS,

Plate VII., fig. 3.

♂. Niger, nitidus, glaber, antennis brunneis; caput punctulatum, antice vage longitudinaliter in medio sulcatum, crebre sed laxe punctulatum; prothorax nonnihil rotundato ampliatus, longitudine tertio latior, antice posticeque sub-sinuatus, angulis anticis acutis, sub-prominulis, posticis nullis, totus marginatus, supra modice convexus, crebre sed haud profunde punctulatus; scutellum breve; elytra oblongo ovalia, antice prothorace vix latiora, a basi ultra medium modice ampliata, medio prothorace tertio latiora, versus apicem attenuata, supra modice convexa, postice declivia, margine laterali acuta, apice distincte deplanata, in dorso sub-coriacea, lateribus verticalibus, late crebreque granulato tuberculis, spatio supra marginali sat angusto, levi; corpus subtus pedesque ut in *M. spisso*. Long. 20 mm.; lat. 12 mm.

Allied to the preceding species, but easily distinguished by the absence of ridges in the elytra, the discoidal part of which is somewhat uneven yet not quite rugose, and there is a broad lateral band of granulate tubercles reaching from near the base to the apex, of nearly equal width throughout; in the declivity there is also a faint trace of a granulate line and also a few scattered granules.

Transvaal (Leydenburg). In the Pretoria Museum.

MICRANTEREUS AMBIGUUS.

Niger, sub-opacus; caput prothoraxque tenuiter punctulati, punctis squamis minutissimis griseis repletis; prothorax longitudine fere duplo latior, ad medium rotundato ampliatus, basi apiceque emarginatus, angulis anticis sub-acutis, posticis rotundatis, totus marginatus, supra sub-convexus, in medio tenuissime canaliculatus; elytra antice prothorace nonnihil angustiora, pone humeros perparum ampliata, in medio prothorace quarto latiora, versus apicem modice aculeata, thorace fere quadruplo longiora, supra convexa, postice longe dehiscentia, magine laterali acuta, apice deplanata, lateribus fere verticalibus, nitidis, in dorso costa discoidali pone medium acuta, ante apicem abbreviata, ad basim oblitterata carinaque laterali granulata, apicem attingente, præterea rudimentum costæ interstitialis in singulo prædita; parte antica disci sub-levigata, spatio inter costas verrucis, ad lateralem validioribus, sat dense obsito; pedes subtus ut in speciebus præcedentibus. Long. 18 mm.; lat. 9 mm. ♂.

Shaped somewhat like *M. validus*, but the prothorax is a little more amplified laterally; the elytra are a little more narrowed laterally near the base, the lateral costa is formed by a series of tubercles, the discoidal one is also less carinate and more granulose, and the intermediate one is hardly defined, with the exception of a smooth space in the anterior median part of the disk; the surface is covered with more or less triangular warts not very thick set, but denser along the outer ridge.

Hab. Zambesia (Buluwayo). F. C. Selous.

MICRANTEREUS PROPINQUUS.

Niger, supra fere glaber ♂, ♀ elytris pube squamosa fulva obtectis; caput crebre punctatum; ♂ prothorax vix squamosus, nonnihil rotundato amplius, longitudine quarto latior, apice basi haud angustior, angulis anticis acutis, sub-prominulis, posticis rotundatis, totus marginatus, parum convexus; scutellum fere oblitteratum; elytra prothorace basi haud angustiora, triplo longiora, ab humeros pone medium sub-oblique ampliata, deinde versus apicem sub-acuminata, pone medium prothorace tertio latiora, margine laterali acuta, apice deplanata, supra sub-plana, postice abrupte dehiscentia, sat crebre verrucosa, in dorso costis duabus e tuberculis majoribus formatis carinaque laterali verrucosa utroque prædita; pedes corpusque subtus ut in *M. ambiguus*.

♀, a mare differt, prothorace brevissime squamoso pubescente, longitudineque duplo latiore, elytris latioribus, magis ovatis, perparum convexioribus, tuberculis costarum disci magis irregularibus validioribusque, sed ad basim oblitteratis. Long. 17-19 mm.; lat. 9-11 mm.

Hab. Zambesia (Buluwayo). F. C. Selous.

The female is less convex than the other South African species, and, although more broadly ovate, has a facies somewhat similar to that of the ♂.

Allied to *M. ovampoanus*, Pér. (Trans. Entom. Soc., 1896, p. 175), but in the ♂ the two dorsal lines of tubercles are very much better defined, and the ♀ is not quite so convex nor so abruptly dehiscent behind.

MICRANTEREUS PARVULUS.

Niger, sub-opacus, pube squamosa sub-ochracea sat dense obtectus, antennis, palpis pedibusque rufo-brunneis; caput crebre punctatum; prothorax longitudine haud latior, antice lateraliter

nonnihil attenuatus, deinde fere parallelus, sed ad basim leviter sinuatus, basi apice latior, sinuatus, angulis posticis acutis, prominulis, supra antice deflexus, a medio ad basim deplanatus, confertim strigillatus; elytra antice prothoracis baseos nonnihil latiora, ovata, versus apicem acuminata, prothorace duplo longiora, in medio vix quarto latiora, supra deplanata, postice longe dehiscentia, carinis quatuor, secunda brevior, utrinque prædita; sutura elevata, interstitiis verrucis nonnullis indistinctis obsitis; subtus brevissime pubescens; pedes rugosuli, pubescentes, ♂ tibiis intermediis vix sinuatis. Long. 8 mm.; lat. 4 mm.

The facies of this and the following species, and also of *M.* (*Solenomerus*) *agilis*, Per., is somewhat different from that of the other South African species owing to their much smaller size and more trapezoidal prothorax.

Hab. Transvaal.

MICRANTEREUS LITIGIOSUS.

Niger, sub-opacus, squamis cinereis, sat dense obtectus: caput prothoraxque crebre punctati, punctis squamis repletis; hic latitudine longitudine æquali, antice diagonaliter attenuatus, a medio basi leviter emarginatus, basi apice fere duplo latior, lateribus acute marginatis, angulis anticis posticisque rectis, acutis, supra in medio leviter gibbosus, antice posticeque deflexus, intra marginem utrimque sat profunde impressus; elytra ovata, apice acuminata, basi prothorace vix latiora, duplo longiora, medio quarto latiora, supra modice convexa, postice longe dehiscentia, costis quatuor distinctis, sub-acutis, verrucosis sed distinctis in singulo prædita, interstitiis tuberculis nonnullis distantibus obsitis, sutura elevata, verrucosa, margine laterali a basi pone medium verrucosa, deinde carinata; corpus subtus squamosum; pedes validi, squamosi, tibiis anticis inferne vix sinuatis. Long. 9 mm.; lat. 5 mm.

Allied to *M.* (*Solenomerus*) *agilis*, Pér., but the prothorax is more trapezoidal, and the costæ on the elytra are better defined, and more carinate.

Hab. Bechuanaland (Ramoutsa). Miss M. Good.

TRIBE MERACANTHINI.

VUTSIMUS, nov. gen.

Palpi maxillares securiformes; labrum transversum; oculi auguste reniformes, supra distincti; antennæ prothoracis basim attingentes,

articulis tribus vel quatuor penultimis conicis, æqualibus, ultimo præcedenti latior et dimidio longior, cæteris gracilibus; prothorax sub-parallelus vel antice nonnihil attenuatus, basi apiceque haud sinuatus; scutellum breve, triangulare; elytra antice prothorace haud latiora, ad medium magis minusve ampliata, sub-convexa, apice dehiscencia, lateraliter marginata; epipleura levia, angusta, apice latiuscula; pedes longi, graciles, tarsis subtus dense longeque ciliatis, femoribus anticis ante apicem dente valida infra armatis; prosternum processu longo, acuto, mesosternum antice triangulariter incisum.

Differs from *Psorodes* not only in general facies but also in the shape of the antennæ, which are shorter, and the five ultimate joints of which are thickened instead of being of equal width, and nearly filiform; in *Psorodes* the mesosternum is not incised.

Synopsis of Species.

B.—FEMORA POSTICA ELYTRIS LONGIORA.*

*a*³. Elytra postice valde deplanata.

Prothorax parallelus; elytra ad latera scrobiculata, prope suturam laxè punctato seriata *prætorius*.

Prothorax antice attenuatus; elytra regulariter punctato seriata *litigiosus*.

A.—FEMORA POSTICA APICEM ELYTRORUM HAUD ATTINGENTES.

*a*². Elytra postice minus deplanata.

Prothorax antice attenuatus.

Elytra regulariter punctato seriata; interstitiis punctulatis; planis *chrysomelides*.

Interstitiis rude punctatis, sub-convexis *natalensis*.

Elytra prope suturam ininus, ad latera valde scrobiculata, interstitiis indistinctis *transvaalensis*.

*a*¹. Elytra parum convexa, apice longe dehiscencia.

Elytris coriaceis *coriaceipennis*.

VUTSIMUS PRÆTORIUS,

Plate VII., fig. 12.

Caput nigrum, sub-æneum, prothorax pedesque rufi, antennæ longæ, rufæ, articulis quatuor ultimis nigris; elytra viridi ænea, corpus subtus

* It is quite possible that this character is peculiar to the ♂.

nigrum; caput crebre rudeque punctatum, inter antennis sub-arcuatim impressum; prothorax fere parallelus, antice parum emarginatus angulis anticis modice acutis, prominulis, basi haud sinuatus, margine laterali acute marginata, supra sub-deplanatus, sat crebre punctatus, lateribus rugose punctatis, utroque fovea elongata supra marginali, basim attingente, pube albescente repleta; scutellum subleve; elytra antice latitudine baseos prothoracis, pone humeros paullum ampliata, pone medium prothorace tertio latiora, supra parum convexa, apice longe dehiscentia, parte apicali deplanata, longe producta, sub-quadrata, dorso præter suturam, striis ter vel quatuor profunde punctatis, magis distinctis, cæteris cum rugis interstitiorum admixtis, lateribus sub-verrucosis, margine laterali acuta; subtus breviter pubescens, lateribus pectoris fascia laterali albido tomentosa; pedes longi, breviter pubescentes, tarsis subtus longe flavo pilosis. Long. 15 mm.; lat. 7 mm.

This species might be taken at first sight for a *Byzacnus*.

Hab. Transvaal (? Lydenburg). The type is in the Pretoria State Museum.

VUTSIMUS LITIGIOSUS.

Obscure æneus, antennis, pedibus elytrisque brunneo-rufescentibus, sub-nitidis; caput crebre punctatum, linea profunda leviter arcuata, latera haud attingente, antice impressum; prothorax latitudine tertio latior, a medio ad apicem attenuatus, pone medium nonnihil rotundato ampliatus, ad basim leviter emarginatus, supra parum convexus, crebre punctatus, totus marginatus, angulis anticis posticisque acutis, illis prominulis; scutellum punctulatum; elytra antice latitudine baseos prothoracis, pone humeros paullum ampliata, medio prothorace nonnihil latiora, versus apicem modice aculeata, supra ad medium convexa, pone medium longe deflexa deplanataque, margine laterali acuta, postice reflexa, striis late profundeque punctatis prædita, interstitiis punctulatis, ad latera rugosis; epipleura laxè punctulato rugosa; subtus strigillatus; pedes elongati, crebre punctati, laxè pubescentes, tarsi longe denseque fulvo ciliati. Long. 12 mm.; lat. 7 mm.

Hab. Cape Colony (? Transkeian Districts).

VUTSIMUS NATALENSIS.

Æneus, elytris micantibus, antennis pedibusque rufescentibus; caput prothoraxque ut in *V. litigioso*: elytris antice latitudine baseos prothoracis, ad medium ampliatis, prothorace tertio latiora, versus

apicem modice acuminata, supra convexa, postice dehiscentia sed haut deplanata, margine laterali acuta, apice nonnihil deplanata, punctis latis profundisque seriatis prædita, interstitiis rude punctulatis, sub-convexis; subtus nigro æneus, strigillatus; pedes ut in *V. litigioso*. Long. 12–13 mm.; lat. 9 mm.

Hab. Natal (Maritzburg), Zululand (Eshowe). A. Windham.

VUTSIMUS CHRYSOMELIDES.

Supra æneus, elytris micantibus, corpus subtus æneo nigrum, antennis, palpis pedibusque rufescentibus; caput prothoraxque ut in *V. natalense*; elytris antice latitudine baseos prothoracis, ad medium paullum ampliatis, pone medium prothorace tertio latiora, supra convexa, postice sub-declivia, haut deplanata, margine laterali acuta, apice haut deplanata, punctis latis seriatis prædita, interstitiis magis minusve punctulatis, ad latera nonnihil rugulosis, interstitiis planis; pedes subtusque ut in *V. natalense*. Long. 12–13 mm.; lat. $8\frac{1}{2}$ –9 mm.

Hab. Natal (D'Urban), Col. J. H. Bowker; Transvaal (? Leydenburg).

A *V. natalense* præcipue differt interstitiis elytrorum planis.

VUTSIMUS TRANSVAALENSIS.

Capite prothoraceque obscure æneis, elytris æneis, nitidis, ad latera rufescentibus, pedibus rufo piceis; subtus nigro æneo; caput prothoraceque ut in speciebus præcedentibus; elytra antice latitudine baseos prothoracis, ad medium rotundato ampliata, vix pone medium tertio latiora, versus apicem sub-acuminata, supra modice convexa, postice dehiscentia atque nonnihil depressa, margine laterali acuta versus apicem deplanata, in dorso prope suturam vage seriato punctata, deinde ad marginem lateralem rugosa vel scrobiculata, interstitiis indistinctis; epipleura, corpus subtus pedesque ut in speciebus præcedentibus. Long. 13 mm.; lat. 9 mm.

Hab. Transvaal (Leydenburg). The type is in the Pretoria State Museum.

VUTSIMUS CORIACEIPENNIS,

Plate VII., fig. 4.

Supra æneus, elytris paullum nitidioribus, subtus obscure æneus, pedibus antennis palpisque rufescentibus; caput crebre punctulatum;

prothorax longitudine fere dimidio latior, antice a medio sub-diagonaliter attenuatus, pone medium leviter sinuatus, parum convexus, crebre punctatus, in medio linea media depressa longitudinali basi apiceque evanescente; scutellum punctatum; elytra basi prothorace perparum latiora et triplo longiora, ovato-ampliata, medio prothorace tertio latiora, versus apicem acuminata, a basi ultra medium parum convexa, deinde longe deflexa, margine laterali acuta, apice deplanata, vage prope suturam striis linearibus quatuor prædita, superficie tota coriacea, ad latera granose rugosa; epipleura sub-levia; pedes sub-validi, modice elongati, rugoso-punctati, vix pubescentes; corpus subtus punctulatum, abdomine strigillato. Long. 16 mm.; lat. 10 mm.

It is at once distinguishable from the other species by the more elongate shape of the elytra, and the less abrupt incline of the posterior part.

Hab. Natal (D'Urban).

UMSLATUS, nov. gen.

Mentum trapeziforme, palpi maxillares sub-validi, articulo ultimo securiformi; labrum longitudine duplo latior, apice haud emarginatum; oculi elongati, sub-reniformes, antice profunde emarginati; caput latitudine longius; antennæ graciles, longae, fere medium elytrorum attingentes, articulis elongatis, quatuor ultimis præcedentis vix brevioribus; prothorax rotundatus; scutellum latum, triangulare; elytra ovata, apice acuminata, margine laterali acuta; epipleura angustissima; pedes graciles, longi, femoribus posticis abdomine tertio longioribus, anticis ante apicem subtus dente valido armatis; prosternum breve, processu triangulari apice emarginato coxas haud excedente, mesosternum haud incisum.

The antennæ are as slender as in some species of the gen. *Acanthomera*, and the joints are similar, but the prosternal process does not project at all between the coxæ, the basal joints of the anterior tarsi are not dilated, and the hind legs, especially the femora, are much longer than the abdomen.

UMSLATUS AGILIS.

Nigro brunneus, pube flavo grisea, densa, totus vestitus, antennis pedibusque, femoribus apice exceptis, sub-rufescentibus; caput elongatum, antice paulum attenuatum, ante antennis transversim impressum; oculi distincti, superne ampliati; antennæ graciles

longæ; prothorax globosus, longitudine latitudine adæquans, totus acute marginatus, tuberculis minimis sat crebre obsitus; scutellum acutum, parvum; elytra antice latitudine baseos prothoracis, ovato ampliata, apice acuminata, medio prothorace tertio latiora, convexa, apice dehiscentia, margine laterali acuta postice haud deplanata, præter suturam elevatam, tuberculis validis acutis series quatuor formantibus utrimque prædita, spatio supra marginali antice punctato seriato, a medio postice indistincte tuberculato; corpus subtus punctulatum. Long. 10 mm.; lat. 5 mm.

Hab. Cape Colony (Graham's Town), Albany Museum.

GEN. ACANTHOMERA, Latr.

ACANTHOMERA NAMAQUA.

Nigra, fere opaca, pilis erectis flavescentibus vestita; palpis antennisque apice sub-ferrugineis, longe pubescentibus, articulis quatuor ultimis fere glabris; caput valde rugosum, longe pilosum; prothorax longitudine nonnihil latior, regulariter rotundato ampliatum, apice emarginatus, angulis anticis haud prominulis, basi nonnihil latior, supra in disco deplanatus, verrucis nitidis dense obsitus, interstitiis longe flavo pilosis; scutellum parvum, haud acuminatum; elytra prothorace contigua, antice prothoracis basi vix latiora, oblongo-ovalia, in ♀ pone medium leviter ampliata, ibi prothorace quarto latiora, versus apicem modice attenuata, margine laterali acuta, ad apicem haud deplanata, tenuiter reflexa, supra parum convexa, anguste striata, striis granulatis, interstitiis verrucis in disco bi-fariam seriatis, seriebusque pilis longis erectis; epipleura profunde punctata; pedes subtusque sat longe pilosi, abdomine sat crebre punctato. Long. 15–18 mm.; lat. 8–9 mm.

Allied to *A. gratilla*, Herbst, but the erect pubescence is much longer, and the intervals on the central part of the elytra have two distinct series of warts instead of one; the warts are smaller and more closely set on the disk and on the sides.

Hab. Cape Colony (O'Kiep). L. Péringuey.

ACANTHOMERA ASPERIPENNIS.

Nigra, opaca, glabra; caput antice rude punctatum, vertice granulatum; antennæ longæ, graciles, glabræ; prothorax longitudine nonnihil latior, apice paullum attenuatus, basi sinuatus, apice perparum latior, angulis posticis rectis, anticis haud prominulis,

in medio deplanatus, antice sub-deflexus, lateraliter modice convexus, in medio disci breviter canaliculatus, granulis elongatis crebre obsitus; scutellum acutum leve; elytra basi prothorace nonnihil latiora, humeris sub-oblique rotundatis, lateribus haud sensim ampliatis, postice conjunctim attenuata, in dorso sub-depressa, acute marginata, anguste striata, striis granulosis, interstitiis granulis validioribus seriatis instructa; epipleura levia; corpus subtus punctulatum, vage pilosum; pedes rugosi, brevissime pubescentes. Long. 11–14 mm.; lat. 6–7½ mm.

Differs from the preceding species in the absence of pubescence; the prothorax is not quite so amplified laterally, and is more attenuate in front.

Hab. Cape Colony (O'Kiep, Namaqualand). L. Péringuey.

ACANTHOMERA HOTTENTOTA.

Nigra, sub-nitida, supra glabra sed capite antice flavo tomentoso; antennæ elongatæ, brevissime pubescentes; caput crebre punctulatum; prothorax ♂ latitudine nonnihil longior, ♀ longitudine latitudine æqualis, lateribus modice rotundatis, antice leviter attenuatus, marginatus, modice convexus, antice parum deflexus, medio obsolete breviter canaliculatus, granulis nitidis dispersis obsitus; elytra ♂, elongato-ovata, apice acuta, ♀ basi ampliata, medio prothorace duplo latiora, apice modice acuminata nonnunquam sutura a basi pone medium distincte depressa, profunde punctato-striata, seriebus decem e tuberculis validis acutis, retrospinosi, utrimque prædita; epipleura angusta, haud punctulata; corpus subtus punctulatum, breviter laxaque pilosulum; pedes rugosi brevissime pubescentes. Long. 11–19 mm.; lat. 6–8 mm.

This species is at once distinguishable by the few scattered granules on the prothorax, and also the shape of the retrospinose tubercles on the elytra.

Hab. Cape Colony (Namaqualand, O'Kiep, Klipfontein). L. Péringuey.

ACANTHOMERA CONSOCIA.

Nigra, fere opaca, glabra; antennæ longæ, vix pubescentes; caput vertice granulatum, apice punctulatum; prothorax longitudine tertio lator, a medio apice leviter attenuatus, postice sub-rotundatus, totus marginatus, supra antice nonnihil convexus, postice fere deplanatus, medio obsolete longitudinaliter breviterque canaliculatus, granulis sub-nitidis minimis crebre obsitus, interstitiis strigillatis, basi

haud sinuata, angulis posticis rectis, anticis haud prominulis; scutellum leve; elytra prothorace basi nonnihil, pone medium tertio latiora, sub-oblonga, modice convexa, striata, striis granoso-punctatis, interstitiis granulis confertim seriatis instructis; corpus subtus glabrum, nitidum; pedes rugosi, brevissime pubescentes. Long. 11–15 mm.; lat. $6-8\frac{1}{2}$ mm.

Allied to *A. alternans*, Wied., in general appearance, but the prothorax is shorter, the granules are more numerous and more closely set, and the strigillate folds are better defined; the sculpture of the elytra is very different.

Hab. Cape Colony (Namaqualand, O'Kiep). L. Péringuey.

GEN. HOPLONYX, Thoms.

HOPLONYX ASPER.

Niger, opacus, supra glaber; antennæ longæ, graciles, breviter pubescentes, articulis sex ultimis flavescentibus; caput crebre rudeque punctatum; prothorax longitudine fere quarto latior, nonnihil rotundato ampliatus, antice perparum attenuatus, basi apice paullum latior, totus marginatus, vix convexus, granulis confertis dense obsitus; scutellum longum, acute triangulum; elytra basi prothorace fere duplo latiora, parallela, versus apicem attenuata, supra parum convexa, anguste striata, striis distincte granosis, interstitiis tuberculis parvis acutis confertim seriatis instructis; corpus subtus laxè punctulatum pilosulumque; pedes rugosi, brevissime pubescentes. Long. 13–13½ mm.; lat. 6 mm.

Easily distinguished by the granulose prothorax, and the series of small tubercles on the elytra; no other South African species has a similar sculpture.

Hab. Cape Colony (Namaqualand, Klipfontein). L. Péringuey.

GEN. ACASTUS, Pér.,

Trans. Entom. Soc., 1896, p. 177.

ACASTUS PARVULUS,

Plate VII., fig. 9.

Brunneo ferrugineus, antennis pedibusque dilutioribus, pube flavescente brevi supra dense tectus; prothorax antice attenuatus, a tertia parte parallelus, apice truncatus, basi valde bisinuatus, angulis anticis acutissimis, lateribus acute marginatis, supra depressus,

antice nonnihil deflexus; intra basim in medio late impressus, crebre punctulatus; scutellum elongatum, apice rotundatum; elytra prothorace basi fere quarto latiora, oblonga, apice conjunctim rotundata, convexa, fere sub-cylindrica, acute carinata, interstitiis profunde seriato-punctatis; pedes sat longi, levissime punctulati, femoribus anticis dente validissima triangula armatis, tibiis ejusdem paris basi valde emarginatis. Long. $4\frac{1}{2}$ mm.; lat. $1\frac{1}{3}$ mm.

Very much smaller than *A. segnis*, Pér. (*loc. cit.*, p. 178); the prothorax is differently sculptured, the elytra, however, have similar costæ and punctured intervals.

Hab. Natal (Malvern). C. N. Barker.

GEN. ASTHENOCHIRUS, Fairm.

ASTHENOCHIRUS FOVEOLATUS.

Niger, sub-opacus, elytris nitidioribus, antennis rufescentibus; caput perparum scrobiculatum, breviter griseo pubescens, devexum, antice haud transversim impressum; prothorax brevis, longitudine quarto latior, antice nonnihil attenuatus, apice sinuatus, angulis anticis prominulis, basi, apice quarto latior, angulis posticis acutis, supra parum convexus, creberrime punctatus interstitiis levibus, intra marginem basalem laxè pubescens, pube ad laterum densiore; scutellum parvum, punctatum; elytra basi prothorace quarto latiora, humeris prominentibus, ab humeros longe pone medium sub-parallela, a tertia parte postica attenuata, supra pone basim gibbosa, a tertia parte antica pone medium dehiscentia, deinde apice magis declivia, margine laterali actua apice haud deplanata, distincte fossulato seriata, serie juxta suturali sat late punctata; pedes elongati, rugosuli, breviter griseo pubescentes, femoribus anticis robustioribus, infra sub-canaliculatis, spina distincta armatis; corpus subtus pube sericea flavescente sat dense vestitum, pectore abdomineque punctulatis, lateribus strigillatis. Long. 10 mm.; lat. 6 mm.

Hab. Mozambique (Lourenço-Marquez). Mrs. R. Monteiro.

TRIBE AMARYGMINI.

GHALECA, nov. gen.

Palpi maxillares validi, articulo ultimo triangulo, securiformi; labrum latum, breve; caput in thorace sat profunde insertum;

ante oculos, fere ad apicem epistomæ, oblique carinatum; oculi magni, valde emarginati, superne ampliati, sub-approximati; prothorax longitudine fere tertio latior, sub-deplanatus, angulis anticis valde productis, antice nonnihil attenuatus; scutellum parvum, acute triangulum, elytra thorace contigua, antice gibbosa, longe ultra medium parallela, apice acuminata, punctato striata; prosternum processu intercoxali horizontali, antice sub-acuto, mesosternum antice rotundatum excisum, metasternum in medio concavum; pedes sub-validi, breves, femoribus anticis robustioribus, leviter canaliculatis, interne in medio acute dentatis; antennæ modice elongatæ, ultra basim attingentes, articulis quatuor penultimis sub-cylindricis, præcedentibus haud longioribus sed fere duplo crassioribus, articulo ultimo præcedenti tertio longior, externe a medio apice leviter rotundato; tarsi dense longeque fulvo pilosi.

GHALECA LÆTA,

Plate VII., fig. 10.

Æneo micans, capite, prothorace, elytris basi atque apice, epipleuris corporeque subtus distincte flavo pubescentibus; caput crebre punctatum, antice inter carinas laterales sat profunde transversim impressum; antennæ rufo-piceæ; prothorax planus, longitudine latitudine tertio latior, apice emarginatus, angulis anticis acutis, valde prominulis, basi sub-sinuatus, angulis posticis acutis, lateraliter a medio apice attenuatus, apice basi fere tertio angustior, crebre profundeque punctatus, pube decumbente flavescente dense vestitus, marginibus laterum apicisque acutis; scutellum parvum, triangulum, acutum, marginatum, parum punctatum; elytra antice prothoracis basi quarto latiora, humeris sub-obliquis, valde prominulis, pone humeros sub-sinuata, deinde longe ultra medium parallela, ad tertiam partem posticam acuminata, supra a basi pone medium gibbosa, postice deflexa, sub-deplanata, margine laterali acuta, apice haud deplanata, profunde punctato striata, interstitiis planis, punctis minoribus obsitis, basi apiceque laxè flavo villosa; epipleura rugulosa, longe pubescentia; pectus crebre, abdomen tenuiter punctulata, ad latera densius tomentosa. Long. 17 mm.; lat. 9 mm.

Hab. Cape Colony (Port St. John). Miss Hollway.

FAMILY CANTHARIDÆ.

GEN. LYTTA, Fab.

LYTTA MERA.

Glabra, caput, prothorax, scutellum, corpus subtus pedesque virido ænei, sub-nitidi, antennæ, tarsi palpique nigri, elytra flava, linea angusta suturali vittaque discoidali obscure cœrulea utrinque ornata; caput rugosum, vertice obscurius æneo, labro nigro; prothorax vix latior quam longior, ante medium rotundato ampliatus, in medio impressione cruciformi notatus; elytra prothorace duplo latiora, quadruplo longiora, humeris prominulis nonnihil elevatis, sat subtiliter coriacea; subtus brevissime pubescens; pedes punctulati. Long. $8\frac{1}{2}$ mm.; lat. 3 mm.

Hab. Cape Colony (Clanwilliam). C. L. Leipoldt.

LYTTA MASHUNA.

Fusco nigra, dense flavescente pubescens, unguibus flavis; antennæ nigrae, articulis crassiusculis; caput crebre punctatum, impressione sub-apicali notatum, labro maxillisque valde elongatis; prothorax angustus, latitudine fere duplo longior, antice attenuatus, crebre punctatus, in medio disci distincte longitudinaliter impressus; scutellum fuscum; elytra basi prothorace tertio latiora et fere triplo longiora, sub-parallelà, vix rotundata, subtiliter coriacea, pube flavescente dense vestita, flava, plaga infuscata, transversa, sub-basali, ultra medium extensa alteraque angustiore, supra apicali ornata; subtus fuscus; pedes tarsique fusci, dense pubescentes. Long. 9 mm.; lat. $2\frac{1}{2}$ mm.

Hab. Zambesia (Enkeldoorn). J. H. J. Darling.

LYTTA ENONA.

Nigra, dense griseo pubescens, antennis nigris; caput antice fere scrobiculatum, vertice rugosulum, supra oculos macula flava utrinque notatum; prothorax latitudine dimidio longior, ab apice ante medium valde attenuatus, deinde basi fere rectus, supra sub-deplanatus, lateraliter rotundatus, a medio intra basim distincte canaliculatus; elytra prothorace tertio latiora, sub-parallelà, modice convexa, coriacea, dense flavescente pubescentia, sutura vittis discoidalibus angustis

duabus margine laterali flavis in singulo ornatis. Long. 15 mm. lat. 5 mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

LYTTA OVAMPOA.

Elongata, nigra, capite rufo, fronte macula nigra lata, elytris saturate brunneis; caput crebre punctatum, latitudine vix longius, pube griseo-cinerea longa tectum; antennæ nigræ, articulis tribus basalibus rufescentibus; prothorax longitudine latitudine adæquans, apicem versus attenuatus, basi in medio nonnihil emarginatus, subcoriaceus, medio longitudinaliter canaliculatus, sat pubescens, linea longitudinali media e pilis densioribus formata, ornatus; scutellum griseo-pubescens; elytra basi prothorace tertio latiora, retrorsum haud dilatata, apice singulatim rotundata, linea dorsali utrinque nulla, tenuissime coriacea, brevissime brunneo pubescentia, marginibus suturaque angustissime griseo limbatis; subtus dense griseo pubescens. Long. 15 mm.; lat. 4 mm.

The nearest ally to this species is *L. lorigera*, Gerst., the shape, size, and colour are nearly alike, but in *L. lorigera* the head is black and the antennæ totally reddish brown, and the elytra have a discoidal pubescent greyish band, which is entirely wanting in *L. ovampo*a.

Hab. Ovampoland. A. W. Eriksson.

GEN. ZONITIS, Fab.

ZONITIS TRANSGRESSOR.

Flavo testacea, nitida, palpis, antennis, articulis basalibus duobus exceptis, meso et metasterno, femoribus tibiisque apice, atque tarsis totis nigris; caput parallelum, latitudine nonnihil longius, postice ad medium sinuatum, angulis posticis rectis, prominulis, crebre profundeque punctatum; antennæ medium corporis attingentes, compressæ, articulis latis, distincte infra angulatis; prothorax apice basique truncatus, cono similis, basi apice tertio latior, crebre punctulatus, brevissime pubescens, in medio impressione elongata longitudinali longe a basi atque ab apice disjuncta notatus; scutellum crebre punctulatum, apice rotundatum; elytra oblonga, antice prothoracis basi duplo latiora, triplo longiora, pone humeros nonnihil sinuata, pone medium haud sensim ampliata, apice conjunctim rotundata, supra modice convexa, crebre et profunde, postice obsoletius, punctata, costulis tribus distinctis, a basi apice ductis, in

singulo præditis; corpus subtus tenuiter griseo-pubescens; pedes longiusculi, tenuiter punctulati. Long. 14 mm.; lat. $5\frac{1}{4}$ mm.

Hab. Zambesia (Buluwayo). F. C. Selous.

Allied to *Z. sellata*, Fahr.; the elytra have no trace of a transverse black band, and the antennæ are shorter, and the joints wider.

ZONITIS SUAVEOLA.

Flava, elytris roseis vel sub-miniatis; caput profunde, sat crebre punctatum, tenuissime pubescens, epistoma longitudine labri; oculi magni, profunde emarginati, antennæ fere longitudine corporis, nigro fuscae, articulo basali flavescens; prothorax pallide flavus, latitudine vix longior, antice distincte attenuatus, sat late crebreque punctatus, brevissime pubescens; scutellum flavum; elytra fere cylindrica, prothorace dimidio latiora, pube brevissima obsita sat subtiliter coriacea, linea discoidali utrinque vix distinguenda; subtus flava, distincte pubescens; pedes nigro fusci, femoribus flavis. Long. 12 mm.; lat. 3 mm.

Allied to *Z. pulchella*, Pér., but differs in colour; the elytra are a little more distinctly shagreened, and there is only a faint trace of a longitudinal line instead of two.

Hab. Zambesia (Mazoe). J. ffolliot Darling.

ZONITIS SAGA.

Flavo-testacea, elytris pallidioribus, fere stramineis; caput crebre, antice profundius punctulatum, apice in triangulum acutum impressum, epistoma longitudine labri æquale; oculi magni, antice sat profunde emarginati, palpis apiceque mandibularum infuscatis; antennæ longitudine corporis breviores, articulis nigro-fuscis, basali stramineo; prothorax, latitudine vix longior, antice distincte attenuatus, brevissime pubescens, crebre punctatus; scutellum stramineum, punctulatum; elytra prothorace duplo latiora, linearia, pube brevissima obsita, subtiliter coriacea, lineis tribus distinctis in singulo prædita; corpus subtus testaceum crebre minuteque punctulatum, pubescens; pedes etiam punctulati, sat longe pubescentes, femoribus testaceis, genubus, tibiis tarsisque nigro-fuscis. Long. 14 mm.; lat. 4 mm.

Allied to *Z. eborina*, Fahr.

Hab. Cape Colony (Hex River). L. Péringuey.

FAMILY CERAMBYCIDÆ.

SUB-FAMILY CERAMBYCINÆ.

GEN. PHYLLOCNEMA, Thoms.

PHYLLOCNEMA GLORIOSA.

Plate VII., fig. 1.

Nigra, antennis, articulis ultimis duobus vel tribus exceptis, pedibus anticis intermediisque rufis, posticis nigris, femoribus basi rufescentibus; caput antice rugosum, vertice profunde punctatum antennæ articulis quatuor ultimis nonnihil ampliatis leviter serratis, articulis duobus vel tribus ultimis fuscis; prothorax ad medium laterum aculeatus, intra basim transversim impressus, vix convexus, crebre alveolatus; elytra cæruleo-violaceis, prothorace triplo longiora et basi ejusdem fere tertio latiora, humeris callo elevatis, in dorso deplanata, rude coriacea, linea dorsali utroque vix distincta; subtus nigra, prosterno valde rugoso, pectore abdomineque sat crebre punctulatis, illo lateribus pube albo-sericea vestitis, tibiis posticis apicem versus foliaceo-dilatatis. Long. 21 mm.; lat. 6 mm.

In comparison with *P. mirifica*, Pasc., its nearest ally, the distinctive characters are: (1) a wider prothorax, nearly hexagonal and with a different sculpture; (2) antennæ with the joints more serrate and the three apical joints more dilated—these three joints are infusate; (3) foliation of the posterior tibiæ about one-half the size of that of *P. mirifica* (pl. vi., fig. 1A); the colour is also different, the under part, as well as the head and prothorax, being black instead of cæruleous green, the elytra are also brighter purple-blue.

Hab. Zambesia (Victoria Falls). Dr. Bradshaw.

Phyllocnema (Callichroma) holubi, Dohrn., and *P. pretiosa*, Péring., are evidently the same insect as *P. mirifica*, Pasc.

PHYLLOCNEMIDA, nov. gen.

A gen. *Phyllocnema* discrepat tibiis anticis intermediisque latoribus, magis incurvis, infra carinatis, femoribus posticis multo brevioribus, longe clavatis tibiisque posticis incurvatis, compressis, ad apicem sat ampliatis, sed haud foliaceo-dilatatis.

PHYLLOCNEMIDA MANICANA.

Supra cæruleo nigra, lateribus corpusque subtus cyaneo viridibus; caput fronte valde rugosum, vertice scrobiculatum, in medio a basi colli usque ad apicem canaliculatum, tuberculis antennariis validis, articulo basali clavato, apice externe rotundato; prothorax antice transversim leviter impressus, pone medium laterum spinosus, intra basim distincte constrictus, juxta basim carinatus, carina transversa, in medio interrupta, supra crebre scrobiculatus; elytra valde coriacea, prothorace triplo longiora et basi ejusdem nonnihil latiora, humeris prominulis, rotundatis, versus apicem paullum attenuata, dorso depressa, lineis duabus longitudinalibus utroque vix observandis; pectus antice scrobiculatum, longe pubescens, postice profunde punctatum; pedes punctulati, abdomen minute aciculatum. Long. 29 mm.; lat. 7 mm.

Hab. Zambesia (Manica). F. C. Selous.

GEN. HYPOCRITES, Fähr.

HYPOCRITES MATABELENUS.

Niger, elytris nigro vel viridi-cyaneis, nonnunquam apice violaceis; caput fortiter punctatum, antennis ♂ apicem haud attingentibus, ♀ brevioribus, articulo basali profunde punctato, 3°-5° infra sat distincte aculeatis, articulis quatuor ultimis elongatis, 5° nonnihil brevioribus; prothorax longitudine latitudine fere æquali, ad apicem minus, intra basim magis constrictus, lateribus ad medium nonnihil rotundato ampliatis, late crebreque punctatus, lateribus vittis duabus sericeis albis, superiore supra marginali, utrinque ornatus; elytra basi prothoracis latitudine maxima nonnihil latiora, ab humeros apice attenuata, ubi singulatim rotundata basique dimidio angustiora, rude profundeque at regulariter punctata, sutura margineque obscurioribus; corpus subtus punctulatum, nigrum, nitidum, pectore lateribusque abdominis dense albo sericeis; pedes elongati, nigri, femoribus modice clavatis, quatuor anterioribus interdum rubris Long. 15-18 mm.; lat. 4-5 mm.

Hab. Zambesia (Buluwayo). F. C. Selous.

SUB-FAMILY LAMIINI.

? TRIBE PROSOPOCERINI.

DINOCEPHALUS, gen. nov.

Mandibulæ validæ, robustæ, apice arcuatæ; caput latum, antice quadratum, fronte verticali, tuberculo antennario vix elevato, oculi sat lati, fere divisi; antennæ corpore quarto longiores, scapo articulo tertio nonnihil brevior, magis quam duplo crassior, hoc sequenti tertio longior, 4°-10° haud sensim decrescentibus, ultimo præcedenti vix duplo longior; prothorax cylindricus; elytra prothorace vix latiora, ad apicem paullum attenuata, apice conjunctim rotundata, modice convexa; coxæ anticæ modice approximatae, processus prosternalis nullus, mesosternalis antice haud dilatatus, modice rotundatus, basi distincte incisus; pedes mediocres, femoribus leviter clavatis, tarsis dilatatis, articulo primo sequenti vix longior.

The shape of the jaws and that of the head approximate that of *Sternotomis* and *Zographus*, and the antennæ are of the same shape and shorter, but the absence of prosternal process militates against the genus being placed in the *Sternotomini* or *Tragocephalini*; the antennal tubercle is reduced to a mere border, dividing the eye very nearly in two.

DINOCEPHALUS ORNATUS,

Plate VII., figs. 2, 2A.

Nigra, pube cinerea subtilissime violacea obtectus, maculis flavidis, nigro marginatis ornatus; caput latissimum, antice verticale, quadratum, pone oculos ad collum tuberculo parvo utroque munitum, vertice anguste canaliculatum, antice linea elevata longitudinali, maculis septem frontalibus, vitta apicali sinuata in medio bi-incisa, atque plaga in genis ornatum; prothorax cylindricus, postice antice nonnihil angustior, intrâ basim transversim impressus, constrictus, vix punctulatus; maculis quatuor in dorso plagaque laterali utrinque ornato; scutellum triangulare, apice obtuse rotundatum; elytra profunde punctata, prothoracis parte antica haud latiora, basi leviter sinuata, humeris sub-prominulis, ab humeros apice attenuata, ubi conjunctim rotundata, maculis rotundatis 11 in singulo dispositis; corpus subtus tomento cinereo, violaceo vestitum, pectore vitta laterali a thorace continuata, segmentisque abdominis singulo plaga triangula atro-cincta ornato. Long. 16 mm.; lat. 5½ mm.

Hab. Transvaal (Leydenburg) in the Pretoria Museum ; Mozambique. (Lourenço-Marques). H. Junod.

GEN. CYMATURA, Gerst.

CYMATURA MASHUNA.

Nigra pube brunneo fulva, nonnunquam flava, variegata dense vestita ; caput macula frontali fulva notatum, tuberculis antennariis validis, fulvo penicillatis, articulis basi apiceque pallidiore annulatis ; prothorax lateribus medio spina valida armatis, tuberculis duobus fasciculatis in medio disci præditis margineque antica in medio breviter fasciculata, lateribus basique flavo variegatis ; scutellum fulvum ; elytra basi truncata, parallela, apice conspicue extrorsum asciculata, profunde punctata, sat dense pube velutina fusca oblecta, fasciculis bi-seriatis in singulo instructis, sutura ad apicem etiam fasciculata, vittis duabus angustis, flavis, transversis, prima ante, altera longe pone medium positis ornata ; subtus dense pubescens, nigro fulvoque variegata. Long. 27-35 mm. ; lat. 8-10 mm.

Very closely allied to *C. mucorea*, Fairm. It might, perhaps, prove to be only a variety of this species, from which it differs mainly in the width of the two transverse, fulvous, sometimes almost pale orange bands on the elytra, which bands are also very much more narrow.

Hab. Zambesia (Enkeldoorn), J. ffolliot Darling. (Manica), F. C. Selous. I have seen examples from the neighbourhood of Bagamoyo.

GEN. ANOPISTETHA, Reiche.

ANOPISTETHA MASHUNA,

Plate VII., fig. 5.

Nigra, pube cinnamomea dense oblecta ; caput antice plaga quadrata albida ; prothorax lateribus in medio acute spinosis antice leviter, postice profundius transversim impressus, basi ipsa antice magis depressa, in medio disci tuberculis tribus depressis in triangulum positis munitus, vittis duabus angustis a medio basi extensis cretaceis ornatus, inferne ab oculos late cretaceo vittatus ; elytra ad humeros nonnihil dilatata, ubi distincte granulosa, pone humeros parallela, apice conjunctim rotundata, plagis sub-triangularibus tribus, postica angustiore, cretaceis in singulo ornata ; pectus abdomineque

vitta laterali lata cretacea, nonnunquam ad apicem segmenti abdominis primi extensa. Long. 31–36 mm.; lat. $13\frac{1}{2}$ mm.

Size and shape of *A. lactator*, Fabric., but differs in colouring. The whole body, including antennæ and legs, is clothed with a rich cinnamon pubescence; and the white patches on the elytra, instead of being divided by moderately broad bands crossing regularly on the disk, are very much smaller, and divided by very broad intervals of the ground colour.

Hab. Zambesia (Enkeldoorn). J. ffoliot Darling.

GEN. TRAGISCOHEMA, Thoms.

TRAGISCOHEMA LÆTULA.

Nigra, elytris sub-rufescentibus; caput fronte pallide flavo pubescente, vertice vittis tribus nigris, pubescentibus ornato; antennæ nigrae; prothorax sub-cylindricus, longitudine latitudine æquali, pone medium lateraliter nonnihil ampliatus, obtuse angulatus, deinde basi valide constrictus, basi ipsa depressa, vittis quinque nigris, media reliquis latiore; elytra prothorace haud latiora, triplo longiora, parallela, apice conjunctim rotundata, rufescentes, pube flava dense vestita, vittis duabus spatio angusto flavescente separatis, apice ornatis; subtus griseo pubescens, abdominis segmentibus ad latera densius pubescentibus; pedes nigri, pubescentes. Long. 12 mm.; lat. $3\frac{1}{2}$ mm.

Shape and size of *T. apicalis*, Pér.; the posterior black band is divided in two.

Hab. Zambesia (Buluwayo). F. C. Selous.

FAMILY CHRYSOMELIDÆ.

TRIBE EUMOLPINI.

GEN. EURYOPE, Dalm.

EURYOPE LIGHTFOOTI.

Cæruleo-violacea, sub-nitida, antennis violaceis, articulis tribus primis apice rufescentibus, caput plaga latissima, prothorax fere totus, femoribus apice basique, rubris; caput latum, inter oculos leviter bi-impressum, vertice linea brevi basim haud attingente,

crebre punctulatum, vertice anguste violaceo marginatum; mandibulæ nigræ, sub-validæ; prothorax longitudine duplo latior, apice ad latera sinuatus, angulis anticis tuberculosus, prominulis, ante medium lateraliter nonnihil ampliatus, prope basim sinuatus, angulis posticis acutis, prominulis, crebre punctulatus, punctis in disco sub-evanescentibus, totus carinatus, margine antica sublata basique ipsa angustiore, violacea; scutellum leve; elytra prothorace tertio latiora et duplo longiora, humeris valde elevatis, impressione post humerali fere nulla, pone humeros breviter sinuata, apice conjunctim rotundata, supra modice convexa, rugosula, punctis irregularibus, haud profundis, ad latera antice magis distinctis sat crebre obsita; corpus subtus crebre punctulatum, breviter pubescens. Long 8 mm.; lat. 5 mm.

This species is easily recognised owing to its colour.

Hab. Cape Colony (Paarl, Malmesbury). R. M. Lightfoot.

GEN. COLASPOSOMA, Casteln.

COLASPOSOMA JUNODI.

Chalybeum, nitidum, plagis vittisque cupreo fulgidis ornatum; labro, antennarum articulis quatuor basalibus palpisque articulo ultimo excepto rufis; caput crebre, sat profunde punctulatum, antice depressum, in medio puncto distincto munitum, plagis duabus triangulis cupreo-fulgidis notatum; prothorax longitudine duplo latior, lateribus ab apice pone medium sub-obliquis, deinde basi rectis, crebre punctulatum, plaga laterali cuprea superficiei maximam partem occupante, ornatus; scutellum impunctatum; elytra antice prothoracis basi nonnihil latiora, duplo longiora, humeris elevatis, callosis, pone humeros nonnihil ampliata, apice conjunctim rotundata, supra convexa, crebre profundeque punctata, vitta discoidali alteraque supra-marginali latis, procul apicem conjunctis, cupreo-fulgidis in singulo ornatis; corpus subtus crebre punctulatum sat dense griseo pubescens, pedes sat dense pubescentes, femoribus clavatis, anticis inermis. Long. 7 mm.; lat. 5 mm.

A very distinct species.

Hab. Mozambique (Rikatla). H. Junod.

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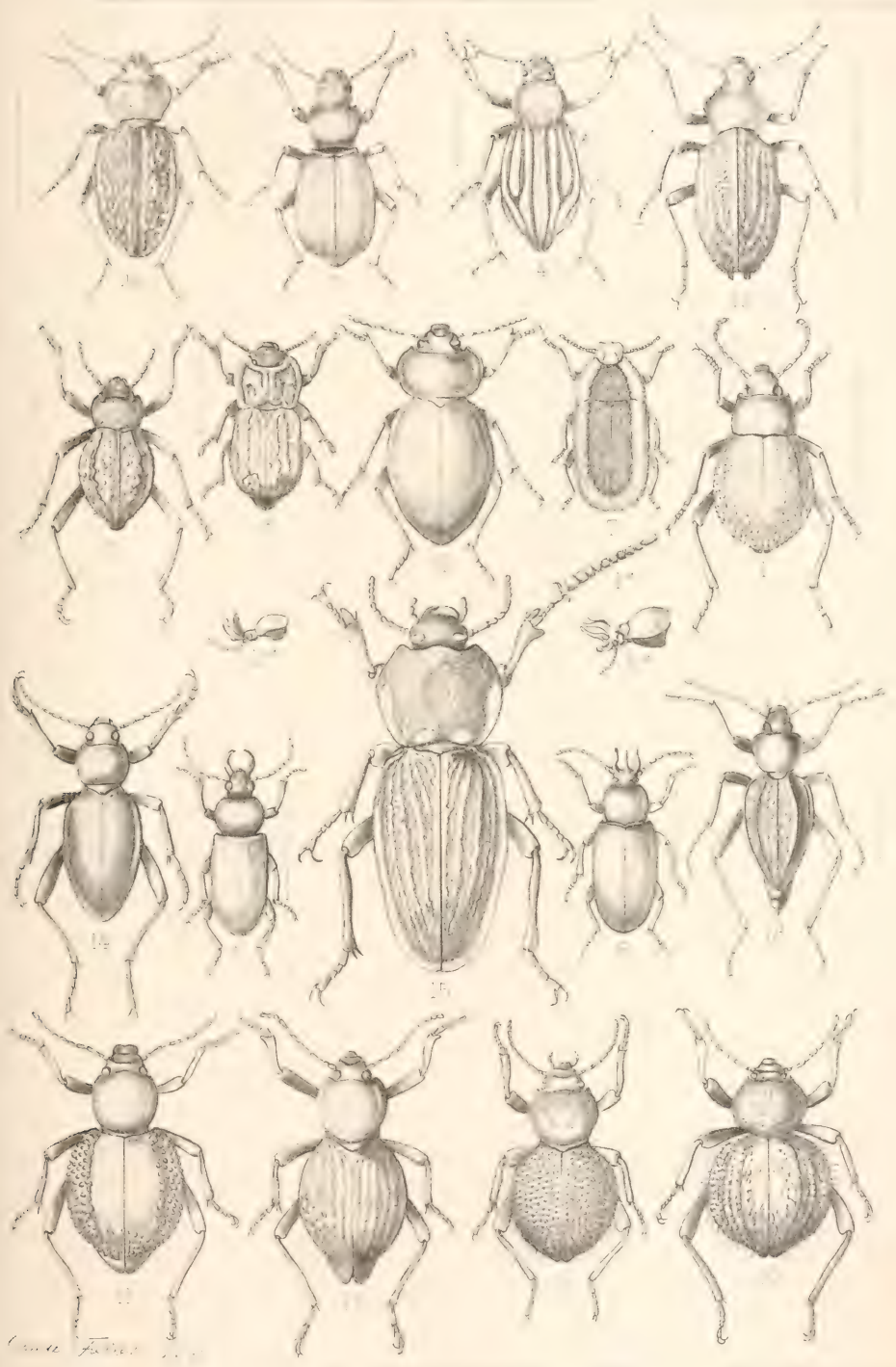
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PLATE VI.

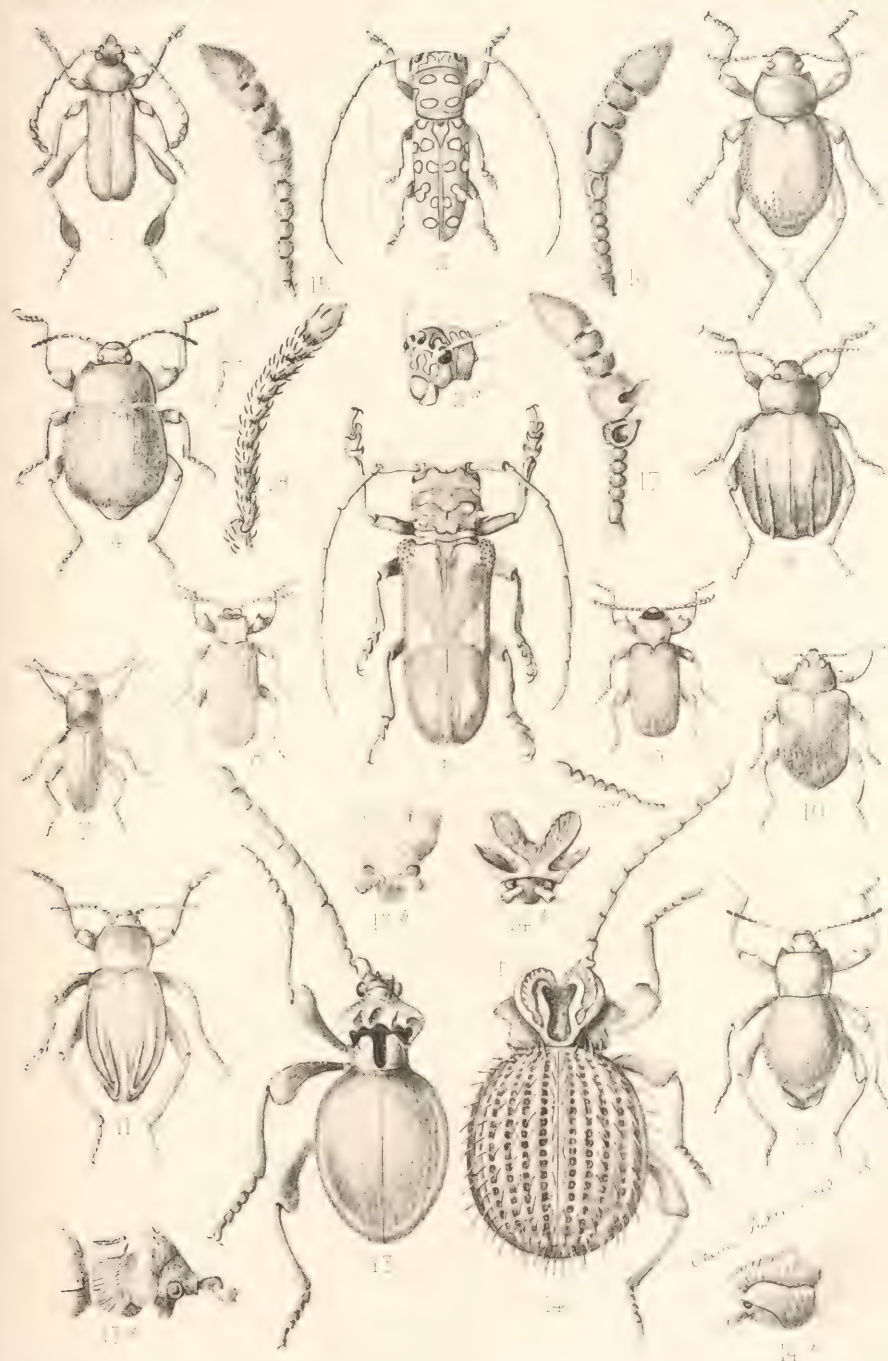
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| 5. <i>Anoplostetha mashuna</i> . | 14, 14 <i>a</i> . <i>Mezium natalense</i> . |
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| 7. <i>Nycteropus capensis</i> . | 16. „ „ |
| 8. <i>Acastus segnis</i> , Péring. | 17. „ <i>enonensis</i> , ♂. |
| | 18. <i>Damarus singularis</i> . |



New Coleoptera



Hélio Dujardin Paris

New Coleoptera

VIII.—*On the South African Species of Peripatidæ in the Collection of the South African Museum.*—By W. F. PURCELL, Ph.D.,
First Assistant.

THE present paper deals with the South African species of *Peripatidæ*, as represented in the collection of the Museum. Full descriptions of the external systematic characters of three out of the four previously described species (*P. capensis*, *balfouri*, and *moseleyi*) are given, together with descriptions of four new and perfectly distinct ones. In addition five other forms are recorded, but not named, on account of lack of sufficient material.

Historical.—The genus *Peripatus* has been known from America since its first establishment by Guilding in 1826, and some years afterwards, in 1837, the first South African species was recorded and described by De Blainville as *Peripatus brevis*, with 14 pairs of legs. It was found by M. Goudot on Table Mountain, but appears never to have been met with since.

Peripatus does not seem to have been recorded from South Africa again until 1868, when Grube described three specimens found under stones on a hill at Constantia by Ritter v. Frauenfeld, during the visit of the Austrian frigate "Novara" to the Cape in October, 1857. These three specimens were named *Peripatus capensis* by Grube, and possessed 17–18 pairs of claw-bearing legs. Two of these, including those figured, belong to *Peripatopsis capensis* as at present limited, while the third belongs to the species subsequently called *balfouri* by Sedgwick.

Guilding placed *Peripatus* amongst the *Mollusca*, while Grube considered it to be an Annelid. It was not until the visit of the "Challenger" to the Cape in 1873, when Moseley obtained and dissected living specimens of *P. capensis*, that the tracheate character of these animals was discovered. Moseley obtained his specimens

mostly from rotten willow logs and stumps behind Cogill's Hotel, at Wynberg, in the Cape Peninsula, and the results of his important investigations were published in 1874 (Phil. Trans., clxiv., pp. 757-782).

In 1879 Wood-Mason described a species with 21-22 pairs of legs from South Africa, which he named *P. moseleyi*. The locality of these specimens is probably King William's Town.

In 1883 Mr. Adam Sedgwick paid a visit to the Cape, and collected a large amount of material of *P. capensis* and *P. balfouri* for embryological investigation. His material was apparently obtained from the Newlands slope of Table Mountain, and in the first part of his 'Development of *P. capensis*' (Q. J. M. S. (2), xxv., p. 450, 1885), the smaller Cape species with 18 pairs of legs was first separated as a distinct form (*balfouri*) from *capensis*. All the Cape species known to him were finally elaborately described in his 'Monograph on the species and distribution of *Peripatus*' in 1888.

Since that time no new South African species have been described. I have, however, published a notice of several of the new forms described in the present paper, but without attaching names to them (Trans. S. A. Phil. Soc., ix., pp. xviii and xix, 1897).

Classification.—In 1894 Pocock proposed to break up the old genus *Peripatus* into three genera, and introduced the terms *Peripatopsis* and *Peripatoides* as new generic names for *P. capensis* and *P. novæ-zealandiæ* respectively, while *Peripatus* was restricted to the American forms (Journ. Linn. Soc. Lond., xxiv., pp. 518-526, 1894; also in Lydekker's Royal Nat. Hist., vi., p. 288, 1896). Although Pocock's suggestion does not appear to have commended itself to subsequent authors, I believe it to be perfectly justified, and have adopted it in the following pages. The species of *Peripatidæ* are neither very few in number nor very similar in the structure of all their organs, and as these structural differences are associated with differences in the geographical distribution the establishment of several genera in the place of one becomes a matter of considerable convenience.

For instance, I am acquainted with no less than six perfectly distinct and five doubtful South African species of *Peripatopsis*, which differ from one another only in such slight characters as the number of the legs, the condition of the foot in the terminal rudimentary pair of legs, the shape of the papillæ, and the colour, while all agree closely in every other character, as far as at present known. Moreover, these eleven forms constitute a compact group,

not connected by a number of intermediate forms with the other genera.

Opposed to these forms of *Peripatopsis*, and differing from them in several more or less important characters, is another South African species, for which I have created a separate genus, described below as *Opisthopatus*.

Both these genera differ from the American forms on the one hand, and from the Australasian on the other in several characters, such as the position of the genital opening (between the legs of the penultimate pair in the American and of the last pair in the Cape and Australasian forms), and the presence (in Australian and American), or absence (in the Cape forms) of *receptacula seminis* in the female, which are surely characters of generic importance. The number of spinous pads and the arrangement of the papillæ on the feet are no doubt of less value, but as these characters go hand in hand with more important ones they are by no means to be disregarded.

Several new species have recently been described by Bouvier (*Peripatus tholloni* from Gaboon, W. Africa) and A. Willey (*Peripatus novæ-britanniæ* from the island of New Britain), which do not appear to fit into any of Pocock's genera. In that case, of course, new ones would have to be made for their reception.*

Specific Characters.—The characters available for distinguishing between the species of *Peripatopsis* are unfortunately very limited in number, almost the only ones being the number of the legs, the structure of the terminal rudimentary pair alongside of the genital opening, and the shape of the papillæ.

The number of the legs is of value apparently in all species in which there are not more than nineteen prægenital claw-bearing pairs, besides the terminal rudimentary pair—at least, no case of variation has come under my observation. On the other hand, if the number of the prægenital legs exceeds nineteen pairs, it is often no longer constant in the same species, and its value as a specific character becomes greatly diminished.

A very important character is the presence or absence of claws on the rudimentary genital legs, and I have used this to divide the genus into two main groups. The presence or absence of a rudimentary foot in the clawless forms will probably be found of specific value, although I am not yet quite sure of the constancy of this

* While this paper was in the press, A. Willey's researches on *P. novæ-britanniæ* (in: Zoolog. Results based on material from New Britain, &c., collected by A. Willey, Pt. I., 1898) came to hand. This author recognises Pocock's new names as sub-genera, and creates a new sub-genus, *Paraperipatus*, for *P. novæ-britanniæ*.

character. The number of spinous pads on the rudimentary legs appears to be always variable.

The colour is useful if associated with structural characters, although, owing to its great range of variation, it would be unwise to found a species on the colour alone. Of course exceptions to this rule may possibly occur. Species inhabiting the same locality may often be easily distinguished from one another by their colour; so, for instance, *capensis* from *balfouri* and *leonina* in the Cape Peninsula, and *clavigera* from *sedgwicki* in the Knysna.

I am uncertain to what extent the form of the papillæ of the body may be utilised, but the curious clavate papillæ of *P. clavigera* appear to form a good character, not met with in any other species of the genus.

Distribution.—The genus *Peripatopsis* is only known from the Cape Colony and Natal. If we exclude *capensis*, it may be stated generally that all the species belonging to the group with claw-bearing terminal feet occur in the western half of the Cape Colony between Cape Town and Graham's Town, extending as far north as the Cedarbergen in Clanwilliam, while the species belonging to the group in which the terminal legs are clawless inhabit Natal and the eastern part of Cape Colony, the most western locality known being the Katberg Forest. *P. capensis*, which belongs to the latter group, is the sole exception, being found in the Cape Peninsula only.

As, however, the number of localities in which *Peripatopsis* has been searched for is very small, the above limits must be looked upon as purely provisional, and they may have to be considerably modified when more forms come to light. There is little reason to doubt but that this genus or others occur in most wooded mountain ravines and in forests throughout South Africa. I have found it in nearly every likely-looking spot which I have thoroughly examined at the right season of the year.

A synopsis of the named species with their localities is given at the end of the paper.

GEN. PERIPATOPSIS, Pocock.

Journ. Linn. Soc. Lond., xxiv., p. 519, 1894 (I have not seen the original paper).

Type.—*P. capensis* (Grube).

Characters.—Legs with three spinous pads; the legs on each side of the genital opening rudimentary, very much smaller than the

preceding pair, and not used for walking, occasionally quite obsolete. Feet with two large papillæ near the apex on the anterior side and a single one on the posterior side. Genital opening always subterminal, longitudinal, never in the form of a transverse slit.

In those cases in which the male has been examined, the pair of legs immediately before the genital opening has been found to possess an enlarged crural gland. These legs are provided with a large white papilla on the ventral side in all our male specimens. The terminal unpaired portion of the *vas deferens* is not very long.

In the female there is no *receptaculum seminis*, and the oviduct contains a number of embryos, all of which are equally developed and of the same size.*

The number of legs is constant in all species, with not more than 19 prægenital pairs. In the remaining species the number appears to vary slightly. The dorsal surface is provided with a fine white median line, often only partially visible in preserved specimens. The outer jaw has a small accessory tooth at the base of the main tooth.

It occasionally happens that an apical dorsal papilla occurs on a foot here and there in addition to the one posterior and two anterior papillæ; now and then also two posterior papillæ are found on some feet.

§ 1. *No claw-bearing legs on each side of the genital opening.*

(a) *Species in which the rudimentary legs on each side of the genital opening are normally without traces of rudimentary feet, and occasionally even absent. A spinous pad is often present on these legs.*

1. *PERIPATOPSIS CAPENSIS* (Grube).

Peripatus capensis (*ad part.*), Grube, *Anneliden*, p. 4, pl. iv., figs. 3, 3a-c, in: *Reise der österreichischen Fregatte Novara um die Erde in den Jahren, 1857, 1858, and 1859. Zoologischer Theil, Bd. ii., Abthlg. iii.* Wien, 1868.

„ „ (*ad part.*), Moseley and Sedgwick, in: *Balfour's Anat. and devel. of P. capensis*, Q. J. M. S. (2),

* I found this to be the case in the female specimens of the following species, which I dissected: *capensis*, *moseleyi*, *balfouri*, *leonina*, *sedgwicki*, and *clavigera*. It must be remembered, however, that at certain times of the year a new set of eggs may have entered the oviduct before the birth of the older brood; in such cases of course there would be embryos of two different stages in the oviduct at the same time, but this is still a very different condition from that which obtains in *Opisthopatus*.

- xxiii., 1883 (pp. 3-8 of the reprint refer to *capensis* and *balfouri*, pl. xiii. and xiv. to *capensis* only).
- „ „ Sedgwick, The develop. of *P. capensis*, Pt. 1, Q. J. M. S. (2), xxv., p. 450, 1885; reprinted in Stud. Morph. Lab. Cambridge, iv., p. 2, 1889.
- „ „ Sedgwick, A Monograph on the spec. and distrib. of the genus *Peripatus*, Guild., Q. J. M. S. (2), xxviii., 1888; reprinted in Stud. Morph. Lab. Cambridge, iv., pp. 157-166, pl. xiv.-xvi. and pl. xx., figs. 27-28, 1889.

Characters.—Claw-bearing (prægenital) legs 17 pairs; the middle spinous pad not very broad, only 1·4-1·7 times as wide as the proximal pad.

On each side of the genital opening in the female is a papilliferous tubercle, which is the rudiment of the genital pair of legs. Near the apex of each on the ventral side is a small, yellowish, spinous pad. In one specimen this pad was surmounted at the apex of one of the tubercles by a movable rudimentary foot, which was provided with four papillæ on its ventral surface and the rudiment of a claw in the centre between them. Often the pad is absent, and sometimes even the tubercle itself may be quite obsolete on one side of the body. In the male the tubercle is even more reduced and without trace of spinous pad or foot.

Papillæ of the dorsal and lateral surfaces conical, high, rounded at the apex, never clavate.

Length and width of average adult ♀ (alive and extended): $58 \times 6\frac{1}{2}$ mm.

„ „ „ ♂ „ „ 32×4 „

„ „ of same ♀ and ♂, preserved in alcohol. sol. of HgCl_2 and contracted: 41×7 mm. and $28 \times 4\frac{1}{2}$ mm. Sedgwick gives 65 mm. for the ♀ and 48 for the ♂.

Colour of darker forms (5 ad. and 7 juv. from St. James, False Bay, and 5 ad. from Platteklip, Table Mountain).—*Dorsal and lateral surfaces* deep velvety black, often with a greenish tinge in some lights; becoming dark green after long immersion in spirits. The five longitudinal darker stripes described for *balfouri* (on p. 342) present, but, excepting the medio-dorsal one, not very distinct. The usual lateral band just above the bases of the legs on each side slightly lighter in colour than the rest of the dorsal surface and often more distinctly green in the living animal.

All the papillæ black, many of the larger tipped with orange-brown, at least along the lighter lateral bands; these orange-tipped

papillæ not markedly less numerous in the two pairs of dark lateral stripes, but sometimes almost or quite absent from the dorsal surface proper.

Outer surface of the legs often bluish black and slightly lighter than the dorsal surface of body, the papillæ black, or blue-black, a number of the larger ones orange-brown in the apical part.

Ventral surface of body generally pale orange, that of the legs bright orange, becoming after long immersion in spirits pallid, owing to the complete extraction of the orange colour. Dark pigment occurs on or between the papillæ along the median line, in the pore at the base of each leg, and often also near the posterior end of the body. Many of the papillæ of the ventral surface are partially pigmented with black. The papillæ on the under side of the head are dark green.

The under surface of the legs is either without pigment or the papillæ are more or less pigmented with black. Spinous pads yellowish green, the proximal ones often orange, becoming pale yellowish in spirits. Foot bluish grey to almost black. Claws pale at the base, dark brown at the apex.

All the *young* (2 cm. in length and under) from the same locality at St. James differ markedly from the adults in colour. The ventral surface is almost entirely free from dark pigment, excepting under the head, and generally also along the median line and in the basal pores of the legs. The upper surface resembles that of *balfouri* rather than the adult *capensis*, for the larger papillæ are much more extensively, often, especially on the sides of the body, entirely orange with a ring of dark pigment at the tips. The orange papillæ on the legs are very pronounced and numerous, resembling those on the sides of the body.

Reddish forms.—I have also examined several adult specimens from Rondebosch (*F. Treleaven*) and Newlands. In one from the latter place the orange-red of numerous large papillæ extends over their whole surface and often also round their bases, this being especially the case in the lateral band just above the bases of the legs. The dorsal surface thus acquires a distinct reddish hue, and the lateral bands appear quite red. The legs, however, remain bluish black, the orange being here confined to the apical region of the larger papillæ. The under surface (exclusive of the head) of several of these specimens is almost devoid of dark pigment, excepting along a faint median streak and often also at the posterior end of the body. A young specimen (1½ cm. long) from the same locality resembles those from St. James.

Mr. Sedgwick described specimens in which the dorsal surface and most of its papillæ are reddish brown, but I have not met with such cases. The same author states that the colour appears to be hardly at all affected by spirits. This is scarcely correct, for the red of the ventral surface may disappear after a few weeks, and although that of the dorsal papillæ may remain for some years, it also ultimately entirely disappears, while the black pigment becomes dark green.

Locality.—*P. capensis* is widely distributed over the Cape Peninsula. It has been found under stones in ravines on the mountain-side at St. James (False Bay), and in similar places on the Cape Town side of Table Mountain (near Platteklip). It is found throughout the woods at Newlands, Rondebosch, Wynberg, and Constantia, often in hiding in rotten tree-stumps. It is not confined to the mountain slopes, but occurs in the low-lying land as well.

2. PERIPATOPSIS MOSELEYI (Wood-Mason).

Peripatus moseleyi, Wood-Mason, Morphol. notes bearing on the origin of Insects, in: Trans. Ent. Soc. Lond. for 1879, p. 155.

„ „ Sedgwick, A monograph on the spec. and distr. of the genus *Peripatus*, Guild., in: Q. J. M. S. (2), xxviii, 1888; reprinted in: Stud. Morph. Lab. Cambridge, iv., pages 168, 169–171, pl. xvii., fig. 8.

The original diagnosis was very brief, as follows: “*P. moseleyi*, with 21–22 pairs of walking legs, from South Africa.”* Professor Sedgwick subsequently obtained and described in detail one of Wood-Mason’s specimens, together with four others in the possession of the Indian Museum, the locality of which is stated to be “near William’s Town, South Africa.” Sedgwick states that Wood-Mason’s specimen was found by Mr. J. P. Mansel Weale, but no locality is given. As Mr. Weale is known to have collected many natural history specimens from the King William’s Town and East London Divisions in the Cape Colony,† I think it highly probable that the type-specimens of this form were also found by him somewhere in these two districts.

* Were it not for Sedgwick’s subsequent description *P. moseleyi* would have remained quite unrecognisable. A diagnosis based on the number of legs alone without the exact locality is totally insufficient.

† See for instance: R. Trimen, S. Afr. Butterflies, i., p. xi., 1887.

Sedgwick has also recorded a specimen of *P. moseleyi* with 22 pairs of legs, found in the Botanic Gardens, Pietermaritzburg, Natal (in: Note on a *Peripatus* from Natal, Proc. Phil. Soc. Cambridge, vii., pp. 250-251).

Six specimens (3 large ♀, 1 large and 2 small ♂), collected by Mr. E. A. Haviland at Escourt, Natal, in 1896, are the only ones in the Museum referable to *P. moseleyi*. The colour of these specimens after immersion in spirits for nearly two years is as follows:—

Dorsal surface a uniform dark green. In one specimen the larger papillæ are paler and brownish green, especially round their bases (these and the lateral bands were probably brown in the living animal), while in another a few conspicuous bright orange papillæ occur on the anterior part of the body. Skin of head sometimes pallid between the dorsal papillæ. Of the five darker longitudinal stripes described for *balfouri* (p. 342) only the medio-dorsal one is very distinct. On each side just above the bases of the legs is the usual lighter band (generally of a paler green, but greenish brown in one specimen). Outer surface of the legs dark green, without any brown papillæ. The under surface is uniformly pale, without any dark pigment, except on the head, where the papillæ are mostly tinged with green.

All possess 22 pairs of prægenital claw-bearing legs, the feet of which are often striped on the dorsal surface with dark green longitudinal lines, just as in Sedgwick's specimens. The spinous pads are yellowish or partly green, the middle pad being 1.6-2 times as wide as the proximal pad. The rudimentary leg on each side of the genital opening is a mere tubercle without feet and with rudimentary or no spinous pad.

The papillæ of the dorsal and lateral surfaces of body high, conico-cylindrical but not clavate, mostly rounded at the apex, those in the lateral paler bands often compressed at the base (possibly on account of the contraction of the body).

Although Escourt is three hundred miles distant from King William's Town there is nothing in the nature of the intervening country to render the occurrence of the same species throughout this wide area improbable.

3. PERIPATOPSIS, spec. nov. (?).

Three specimens in a bottle labelled "Pietermaritzburg, Natal (*Col. J. H. Bowker*, 1892), with 23-24 pairs of claw-bearing prægenital

legs. Papillæ shaped as in *capensis*. Colour dark green, with the larger papillæ pale or brown. The lateral band on each side just above the bases of the legs paler green or quite brown.

It seems to me probable that these specimens belong to a distinct species, but I do not care to create a new specific name for them, as their age and the state of preservation of two of them renders them scarcely suitable for description.

(b) *Species in which the rudimentary leg on each side of the genital opening is normally provided with a rudimentary and clawless, but distinctly recognisable foot.* (On account of the state of preservation of some, and the small number of specimens at my disposal of others, I have not thought it advisable to attach new specific names to the three forms which come under this heading.)

4. PERIPATOPSIS, spec. nov. (?).

Two old specimens, labelled "Katberg Forest," fifty miles north-west of King William's Town (*W. C. Scully*, 1884), with 21 pairs of claw-bearing prægenital legs. Papillæ mostly low and stumpy, conico-hemispherical, higher at the posterior part of body. The rudimentary leg on each side of the genital opening furnished with a spinous pad and a distinct foot, the latter bearing an anterior and a posterior papilla near the apex, but no claws.

5. PERIPATOPSIS, spec. nov. (?).

A small female from Richmond, Natal (*Rev. J. R. Ward*, 1898), with 21 pairs of claw-bearing prægenital legs. Papillæ shaped as in *moseleyi*. The dorsal and lateral surfaces of the living animal were of a bright orange colour, with a black median stripe, and midway between the latter and the bases of the legs are a number of blackened papillæ, which form a dark stripe on each side. Outer surface of legs with blue-black papillæ and a few pinkish brown ones. Under surface of body pink, without dark pigment. Genital legs like those of the previous form, but the spinous pad appears to be rudimentary. I examined this specimen alive.

6. PERIPATOPSIS, spec. nov. (?).

A large male, also from Richmond, Natal (*Rev. J. R. Ward*, 1898), with 20 pairs of claw-bearing prægenital legs, was, when alive, of an almost uniform dark olive-greenish brown, with the usual black medio-dorsal stripe and a paler lateral band on each side just above

the bases of the legs. Colour of legs and ventral surface and structure of the genital legs as in the previous form. Papillæ shaped as in *moseleyi*. This specimen was examined alive.

It is a matter of uncertainty whether the two last-mentioned forms from Richmond belong to one or to two species, and whether either or both are co-specific with the specimens from the Katberg Forest.

§ 2. Rudimentary legs on each side of the genital opening furnished with perfect feet, each bearing a pair of claws.

7. PERIPATOPSIS BALFOURI (Sedg.).

Peripatus capensis (ad part.), Grube, Anneliden, p. 4, in: Reise der österreichischen Fregatte Novara um die Erde in den Jahren, 1857, 1858, and 1859. Zoologischer Theil. Bd. ii., Abthlg. iii. Wien, 1868.

„ „ (ad part.), Moseley and Sedgwick, in: Balfour, Anat. and devel. of *P. capensis*, Q. J. M. S. (2) xxiii., 1883 (pp. 3-8 of the reprint refer to *capensis* and *balfouri*).

„ *balfouri*, Sedgwick, The develop. of *P. capensis*, Pt. 1, Q. J. M. S. (2), xxv., p. 450, 1885; reprinted in: Stud. Morph. Lab. Cambridge, iv., p. 2, 1889.

„ „ Sedgwick, A monograph on the spec. and distrib. of the Gen. *Peripatus*, Guild., in: Q. J. M. S. (2), xxviii., 1888; reprinted in: Stud. Morph. Lab. Cambridge, iv., pp. 166-7, pl. xvii., figs. 9-10, and pl. xx., fig. 24.

Characters.—Claw-bearing legs 18 pairs; the middle spinous pad broad, 2-2.6 times as wide as the proximal pad.

The leg on each side of the genital opening in the female with the well-developed foot somewhat smaller, or at least shorter, than that of the preceding leg; the trunk much reduced, with one distinct or rudimentary spinous pad and sometimes with rudiments of a second, and about two rows of papillæ between the pad and the body on the median side. In the male the foot is much smaller than those of the previous pair, and the trunk and spinous pads are even more reduced than in the female. The penultimate pair of legs is also somewhat smaller than the preceding pair in the male.

The papillæ on the dorsal and lateral surfaces of body conical or cylindrical but never clavate, often conical at base and attenuated

and sub-cylindrical in the distal part; high, mostly at least as high as broad at the base.

Length and width of large ♂ (alive and extended): 32×2.1 mm.

„ „ „ ♀ „ „ 43×3 mm.

„ „ of another large ♀, preserved in alcohol. sol. of HgCl_2 and contracted: 28×3.75 mm.

Colour.—*Dorsal and lateral surfaces* dark olive-green to almost black, with five darker longitudinal stripes, viz., a narrow, well-defined, medio-dorsal stripe, divided longitudinally by a fine white line, and two broader, generally less distinctly defined, lateral stripes on each side. The lower of the lateral stripes connects the upper portions of the bases of the legs, while the upper one lies between these and the dorsal stripe, but nearer to the former than to the latter. In the medio-dorsal and lower lateral stripes there are generally no orange papillæ, although occasionally a couple may be present; in the upper lateral stripe a few orange papillæ generally occur in places, or they are entirely absent from it. The surface between the two lateral stripes forms on each side a lateral band lying just above the bases of the legs and generally of a lighter shade of colour than the broader dorsal bands, which lie between the upper lateral and the medio-dorsal dark stripes, one on each side of the latter.

The ordinary papillæ are black or almost so, many of them with a minute pallid or orange dot in the middle of the apex. Evenly distributed amongst these, except in the five dark stripes, are a much fewer number of large orange-coloured papillæ (about 40–50 to each of the 18 leg-bearing body segments). The orange colour occupies the sides of the papillæ, and generally also (but not in all specimens) spreads a little round the base, while the apex is generally dark green or black with a minute orange dot in the centre. In preserved specimens all the orange is extracted and the papillæ appear white.

The outer surface of the legs is dark green, without any green-tipped orange papillæ.

Ventral surface of body and legs in preserved specimens pallid or slightly tinged with green between the papillæ; the numerous papillæ more or less dark green, sometimes only faintly tinged. No transverse or longitudinal green stripes.

Spinous pads of legs in the living animal greenish yellow—in preserved specimens green, the proximal part of the middle pad yellowish. *Foot* a bluish or blackish grey. *Claws* pale at the base, dark brown at the apex.

Amongst the large number of specimens which I have examined, those from the following localities deserve special notice:—

(a) About forty specimens from the wooded slopes of Table Mountain at Newlands. It is characteristic of these specimens that the dark-green pigment is very often (but not always) very faint or quite absent between the dark-green papillæ on the head, and sometimes almost the whole surface of the latter, including the papillæ, is quite white and devoid of all pigment. In some specimens a large amount of orange-red pigment occurs, in addition to the colouring matter which is always present in the orange papillæ. This gives the dorsal surface a decided reddish hue, while the lighter parts (upper surface of head, ventral surface, especially of head) become bright orange-red. In one very red specimen the greater part of the head, however, was quite white in the living animal. In these red specimens the ordinary green pigment is present in the usual quantity. Orange papillæ were never absent from the dorsal surface. Professor Sedgwick appears to have obtained his specimens from this locality.

(b) About forty specimens from the mountain-side at Simons Town. In these the dorsal surface of the head is always as darkly pigmented as the rest of the upper surface. The ventral surface of the body in the living animal is pale with a bluish or pinkish tinge, that of the head orange-red. The orange pigment of the dorsal surface is confined to the orange papillæ, and is sometimes very pale. In some specimens these orange papillæ are partially or wholly blackened in some parts of the body; these form a transition to the following:—

(c) Two specimens from a ravine on the mountain-side at St. James (False Bay). In these all the papillæ of the dorsal and lateral surfaces are black, without any trace of orange.* Otherwise they resemble the specimens from Simons Town.

(d) A single female specimen preserved in spirits and found in the Cedar Mountains at the Boschkloof Waterfall, near Clanwilliam, by Mr. C. L. Leipoldt in November, 1897. The peculiarity of this specimen is the presence on the outer surface of each leg of a small number (two to four) of green-tipped orange papillæ, similar to those on the body. These are never found on the legs of specimens from the Cape Peninsula, although in these the apices of one or two of the papillæ of the legs may occasionally be orange, owing to the expansion of the central apical dot over the whole tip. The skin of

* I was formerly inclined to consider these a new species (Trans. S. A. Phil. Soc., ix., p. xviii, 1897).

the head is paler than the rest of the dorsal surface. The orange of the papillæ is still recognisable after nearly a year.

The effect of hardening agents and spirits of wine upon the colour deserves notice. At first the green tinge gives place to a deep black, only to reappear after the lapse of some months, and in course of time the dark pigment becomes a more and more decided green. Immersion in spirits for a few weeks or months further causes every trace of orange and red to disappear.

Locality.—Under stones, logs, bark, and in rotten wood on the slopes of Table and other mountains of the Cape Peninsula, and in the Cedar Mountains, Clanwilliam. I have found this species in the Platteklip Ravine on the Cape Town side of Table Mountain, in the woods on the Newlands slope, and in ravines near Camp's Bay and Hout Bay; also at St. James and at Simons Town along the False Bay coast. I have never met with it on Signal Hill, which is the home of *P. leonina*.

P. balfouri was confused with *capensis* for a long time, until Sedgwick separated it in 1885. In his original description this author states that the larger papillæ on the dorsal surface are white, and that the eighteenth pair of legs in the male is hardly distinguishable from the large papillæ found near the hind end of the body. This caused me at first to consider the specimens described above as possibly different from Sedgwick's *balfouri* (Trans. S. A. Phil. Soc., ix., p. xviii, 1897), but I am now convinced of their identity, and think it probable that that author's description was drawn up from preserved specimens only.

8. PERIPATOPSIS LEONINA, n. sp.*

Characters.—Claw-bearing legs 22 pairs in the types, 21 pairs in other specimens; the middle spinous pad very broad, 2·2–3 times as wide as the proximal pad.

The leg on each side of the genital opening as in *balfouri* in both sexes.

In the male the last prægenital pair of legs is also somewhat smaller than the penultimate pair.

The papillæ on the dorsal and lateral surfaces shaped as in *balfouri*.

Length of large ♂ (alive and extended): 34 mm.

* These specimens are referred to by me in Trans. S. A. Phil. Soc., ix., pp. xviii–xix, 1897.

Length and width of large ♀ (alive and extended) : 49×2.8 mm.

“ “ same ♀, preserved in alc. sol. of HgCl_2 and contracted : 34×4 mm.

Colour.—*Dorsal and lateral surfaces* greenish black to black (becoming dark green after long immersion in spirits), with five darker longitudinal stripes exactly similar to those of *balfouri*. The lateral band just above the bases of the legs on each side lighter than the dorsal surface. The orange papillæ blackened at the apex and exactly resembling those of *balfouri* in their distribution, excepting that they are never wanting.

Ventral surface generally pink in the living animal, pale in preserved specimens, with numerous papillæ more or less tinged with dark green; traces of a dark, longitudinal, median line and dark transverse lines between the bases of opposite legs rarely present.

Legs.—Outer surface black to greenish black, without any green-tipped orange papillæ. Ventral surface like the under side of body. Colour of spinous pads, feet and claws, as in *balfouri*.

The orange papillæ of the body lose their colour much more rapidly in spirits than is the case in *balfouri*, the papillæ becoming white after a few hours' immersion. I have never noticed orange or red pigment, similar to that found in some specimens of *balfouri*, in any other parts of the dorsal surface.

Locality.—A number of males and females from under stones in the small ravines on the Cape Town side of Signal Hill (Lions Hill) during the winter months. I have never found this species on Table Mountain nor in any other locality, and it appears to be the only one inhabiting Signal Hill. Its existence there was first pointed out to me by Mr. R. M. Lightfoot.

Individuals with 22 pairs of legs were found to be just twice as numerous as those with 21 pairs; this applies to both sexes. I have no doubt as to the specific identity of both these series of specimens. Apart from the fact that I could discover no differences either in habits, colour, or structure, other than the number of legs, is the circumstance of a female with 22 pairs of legs giving birth shortly after being captured to thirteen young, two of which possessed 21 pairs of legs and the remaining eleven 22 pairs each. I have also captured a male specimen with 21 pairs on one side of the body and 22 on the other.

9. *PERIPATOPSIS SEDGWICKI*, n. sp.

Characters.—Claw-bearing legs 20 pairs; the middle spinous pad not very broad, 1.5–2.2 times as wide as the proximal pad.

The legs on each side of the genital opening in the female with the foot normally developed, although smaller than that of the preceding legs, the trunk much reduced but better developed than in either of the preceding species and longer than the foot, generally with two, sometimes even with three, rarely only one distinct spinous pad, and several rows of papillæ between the pad and the body on the median side. In the male the foot, pads, and trunk of the leg are much more reduced than in the female.

Most of the papillæ of the dorsal and lateral surfaces are short and stumpy with rounded apices, often conico-hemispherical, especially the larger ones of the middle portions of the body, the smaller ones, however, often sub-cylindrical in their distal part and slenderer; none are ever clavate.

Length and width of only ♂ (preserved in alc. sol. of HgCl_2 and contracted): 25×4.25 mm.

Length and width of largest ♀ (similarly contracted): 52×7 mm.

Colour of preserved specimens ($2\frac{1}{2}$ years in spirits).*—*Dorsal and lateral surfaces*: Ground colour made up of black (varying to greenish black) and orange-brown pigment. The latter predominates in the broad dorsal band on each side of the medio-dorsal stripe, and especially in the lateral band just above the bases of the legs on each side, both pairs of bands appearing orange-brown. The dark pigment predominates in five longitudinal dark stripes, corresponding to those of *balfouri*. Of these the medio-dorsal one is the darkest and narrowest, and is divided longitudinally by a fine white line, while the upper lateral stripes are very broad with numerous orange-brown papillæ.

The papillæ are black with numerous large orange-brown ones interspersed amongst them. These latter are broadly orange-brown round their bases, and mostly not green-tipped; they are evenly distributed over the whole surface, often occurring in the lower dark lateral stripe as well. In the light-coloured lateral bands the dark pigment of the papillæ is often almost entirely replaced by orange-brown.

Ventral surface uniformly pale, without pigment, or more often with dark pigment forming a faint or more or less distinct median longitudinal stripe, and transverse stripes between the bases of opposite legs.

* These specimens are mentioned in Trans. S. A. Phil. Soc., ix., p. xviii, 1897. The original colour of the dorsal surface has remained practically unchanged, as far as I can recollect, although the original tints of the ventral side have probably disappeared.

Legs.—Outer surface with numerous very dark smaller papillæ and a number of large pale orange papillæ. Ventral surface without pigment. Spinous pads yellowish. Feet and claws coloured as in *balfouri*.

In some specimens the two kinds of pigments are more evenly distributed over the dorsal surface, which appears greenish brown or brownish green with the upper lateral dark stripes indistinct.

Locality.—Eleven females of various sizes and one small male, all preserved in an alcoholic solution of HgCl_2 , and collected by myself at the Knysna in March, 1896. They occur in rotten wood in the forests and under weed-heaps, &c., on the farms near the town.

This is a very large and stout species, and differs markedly in colour from the other species of this section. The genital legs, too, are much better developed. The orange-brown pigment is only partially dissolved by spirits; the greater portion remains undissolved and the colour scarcely changes. I dedicate this handsome and distinct species, which rivals *capensis* in size, to Mr. Adam Sedgwick.

Other localities are :—

(a) Plettenberg Bay in the Knysna Division. Several very badly preserved specimens from this locality are recognisable as belonging to this species.

(b) Grahamstown. Two specimens, presented by Dr. Schönland, undoubtedly belong to this species and agree very closely with the types in colour and structure, excepting that the dorsal and lateral papillæ are longer and not so stumpy. A third specimen from the same bottle differs in the ground-colour of the dorsal surface, which is green instead of brown, with numerous large brown papillæ; the lateral bands are entirely brown. This specimen is doubtless merely a colour variety of *sedgwicki*.

A female captured at the end of March, 1896, at the Knysna contained a number of embryos of a very advanced stage of development, and evidently almost ready for birth. They already possessed five longitudinal green lines, corresponding to the dark ones of the adult, while the legs were also dark green.

10. *PERIPATOPSIS CLAVIGERA*, n. sp.

Characters.—Claw-bearing legs 17 pairs; the middle spinous pad very broad, 2·2–2·9 times as wide as the proximal pad.

The leg on each side of the genital opening in the female with the foot normally developed and slightly smaller than that of the pre-

ceding leg; the trunk very much reduced and scarcely as long as the foot; only the distal pad is present, although sometimes in a rudimentary condition, and between it and the body there is only one row of papillæ on the median side.

The papillæ on the dorsal and lateral surfaces of the body mostly flat-topped, cylindrical, or clavate, *many being enlarged in the distal part and constricted towards the middle or base.*

Length and width of largest ♀ (preserved in alc. sol. of HgCl_2 and contracted): $34 \times 4\frac{1}{2}$ mm.

Colour of preserved specimens ($2\frac{1}{2}$ years in spirits).—*Dorsal and lateral surfaces* dark green,* the lateral band on each side just above the bases of the legs lighter than the dorsal surface. The medio-dorsal and the lower lateral darker stripes distinct and similar to those of *balfouri*; the upper lateral dark stripe, however, distinctly defined only along its lower border and as thickly studded with orange papillæ as the rest of the dorsal surface. These papillæ evenly distributed over the whole surface (except in the medio-dorsal stripe) and also between the legs, resembling those of *balfouri* in colour but not becoming white in spirits.

Ventral surface more or less tinged with green in places, sometimes the greater part greenish. The papillæ with dark-green tips numerous; intermingled with them are a fewer number of pallid papillæ, which are broadly pallid round their bases and green-tipped in the darker specimens only. These pale papillæ correspond to the orange ones of the dorsal surface.

Legs.—Outer surface dark green with no, or at most one or two, orange papillæ to each leg. Under surface like the ventral side of body, but often paler. Spinous pads green, the proximal pad or the proximal part of the middle pad, or both sometimes yellowish.

Locality.—I collected four large females from rotten logs in the forest at Knysna.

This species is much rarer than *sedgwicki*, which inhabits the same locality and was also found in the same logs. It differs from all the other species of the genus in possessing the curious clavate papillæ of *Opisthopatus cinctipes* on the upper surface.

On dissecting a specimen of this species, captured at the end of March, 1896, I found the oviducts full of a number of very advanced

* These specimens were collected in March, 1896, and in August of the same year I referred to them as being of a black colour above (Trans. S. A. Phil. Soc., ix., p. xviii, 1897). The change to dark green is quite the usual one, and the original colour was probably a greenish black, which agrees very well with my recollections of the living animal.

embryos, evidently almost ready for birth. In the intestinal canal of the same specimen was the empty skin of another, which had been swallowed whole, and to which the jaws and some of the claws of the legs were still attached.

The following form of this section is unknown to me :—

11. *PERIPATOPSIS*, spec. nov. (?)

Sedgwick, A Monograph on the spec. and distr. of the genus *Peripatus*, Guild., *loc. cit.*

On p. 169 of the reprint this form is described as a specimen from Table Mountain with 20 pairs of claw-bearing legs, and closely resembling *balfouri* in colour and structure. The last pair of legs, between which the genital opening lies, has a normal foot but no spinous pads, and is much reduced in size. Sedgwick places this form provisionally as a variety of *balfouri*.

GEN. *OPISTHOPATUS*, nov.

Type *O. cinctipes*, n. sp.

Characters.—As in *Peripatopsis* except: The leg on each side of the genital opening not rudimentary, as large and as well developed as the preceding pair and probably used for walking. Foot with a single anterior, a posterior, and a dorsal papilla, all of which are large and near the apex. Genital opening in the form of a transverse slit, a little remote from the hind end of the body.

Male unknown.

In the female specimen which I opened the oviducts resemble those of *P. capensis* in being unprovided with *receptacula seminis*. They differ, however, in containing a number of embryos of different stages of development, the one immediately before the external opening being much larger than any of the others in the same oviduct. Evidently the young are born at remote intervals, and not all within a short period as in *Peripatopsis*. With regard to the position of the organs in the posterior half of the body, it may be mentioned that the intestinal canal was pressed against the left side of the body and slightly ventral; the portion of the right oviduct containing the large embryo nearest the opening lay along the ventral body-wall, while the left oviduct with its large embryo lay above the right one, just under the dorsal wall of the body, crossing over the intestinal canal near its posterior end.

The narrow slit-like genital opening is raised on an eminence and is situated at some little distance from the anus and hind end of the body, which projects some distance beyond the last pair of legs. In this respect the genus bears some apparent resemblance to the condition which obtains in the Australasian species.

The dorsal surface is provided with a fine median white line, and the outer jaws, like those of *Peripatopsis*, possess a small accessory tooth at the base of the main tooth.

This genus to some extent resembles the Australasian species of *Peripatoides*, in which the papillæ of the feet are similarly arranged, and the genital opening is also situated between the last pair of fully developed legs. It differs, however, in having a transverse genital opening, and in the absence of *receptacula seminis* in the female.

Only the following species is known :—

12. OPISTHOPATUS CINCTIPES, n. sp.

Characters.—Claw-bearing legs 16 pairs ; the middle spinous pad broad, two to three times as wide as the proximal pad. Papillæ of dorsal and lateral surfaces cylindrical or clavate, many of them being enlarged in the distal part and constricted towards the middle or base, mostly flat-topped at apex.

Length of spirit specimen 21 mm., breadth $3\frac{1}{2}$ mm.

Colour of spirit specimens.—*Dorsal and lateral surfaces* very dark green, the lateral band on each side just above the bases of the legs paler green. The ordinary papillæ very dark, almost black in the distal part, the orange-brown papillæ scattered amongst these in the same proportion as in *P. balfouri*, with or without dark green round the tips. Dark medio-dorsal stripe distinct, divided longitudinally in places by a fine white line.

Outer surface of *legs* and the sides of the body between the legs dark green, with numerous dark-green papillæ and a small number of orange-brown ones. Ventral surface of legs peculiarly marked with transverse bands of pale papillæ, alternating with similar bands of dark-green ones. Spinous pads green, the proximal pad and the proximal part of the middle pad generally yellowish.

Ventral surface of body pallid, pigmented with dark green in the pores at the bases of the legs, and, in one specimen, on an irregular median area behind each pair of legs. Numerous more or less dark-green papillæ are scattered over the whole surface.

Locality.—Two specimens (one of which on opening proved to be a female) from Dunbrody, near Blue Cliff Station, Uitenhage Div. (Rev. J. A. O'Neil, 1898).

The following form of uncertain position is unknown to me:—

PERIPATUS BREVIS, Blainville.

Page 8 of Gervais' *Etude pour servir a l'histoire natur. des Myriap.*, in: *Ann. Sci. Nat.* (2), vii., 1837.

Black above, pallid below, with 14 pairs of legs; length 43 mm., breadth 4 mm. Found under a stone in a wood on Table Mountain. (Quoted from Sedgwick, 1898.) Moseley considers this species to be *capensis* badly described. The circumstance that it appears never to have been found again certainly lends colour to this view.

Synopsis of the named South African Species.

A.—Genital opening longitudinal, situated between a pair of rudimentary (sometimes quite obsolete) legs Gen. PERIPATOPSIS, Poc.

a. These legs with neither claws nor rudiments of feet.

a¹. Seventeen pairs of claw-bearing legs. Cape Penin. *P. capensis* (Grube).

b¹. Twenty-one to twenty-two pairs of claw-bearing legs. King William's Town and Natal. *P. moseleyi* (Wood-M.).

b. These legs with normal feet and claws.

a². None of the dorsal and lateral papillæ clavate.

a³. Eighteen pairs of claw-bearing legs. Cape Penin., Clanwilliam.
P. balfouri (Sedgw.).

b³. Twenty-one to twenty-two pairs of claw-bearing legs. Cape Penin.
P. leonina, n. sp.

c³. Twenty pairs of claw-bearing legs. Knysna, Graham's Town.
P. sedgwicki, n. sp.

b². Many of the papillæ of the upper surface of body clavate, being enlarged in the apical part; seventeen pairs of claw-bearing legs. Knysna.
P. clavigera, n. sp.

B.—Genital opening a transverse slit situated between the last pair of legs, which are normal and not reduced in size Gen. OPISTHOPATUS, nov.

Claw-bearing legs sixteen pairs. Uitenhage Div. . . . *O. cinctipes*, n. sp.

Doubtful species with fourteen pairs of legs. Table Mountain.

Peripatus brevis, Blainv.

X.—*A Contribution to the Knowledge of South African Mutillidæ*
(Order Hymenoptera).—By L. PÉRINGLEY, Assistant Director.

(Plate VIII.)

I HAD barely completed my Description of some New or Little Known South African *Mutillidæ*, when the number of these insects in the cabinet was increased by 26 hitherto undescribed species ; sexes of seven species were ascertained, and the number of South African *Mutillidæ* described is now 169, while that of which both sexes are known with certainty is 16.

The Museum is indebted for that considerable increase mainly to the generosity of Mr. G. A. K. Marshall, who collected in the neighbourhood of Salisbury, Mashonaland, Mr. C. N. Barker, of Durban, Natal, Rev. J. A. O'Neil, whose captures were made in the Uitenhage district, and to Dr. H. Brauns, late of Port Elizabeth, Cape Colony. To the latter I am indebted for the communication of the ♂ of *M. tauriceps*, Kohl., which, in my opinion, is probably identical with *M. deformis*, Sm.

The Rev. J. A. O'Neil has hit upon a very interesting mode of capture of both sexes by the so-called "sembling" method. He finds that by seizing hold of the female in such a way as to induce her to produce her well-known stridulating noise, the males immediately appear and swarm round, and even settle on the hand of the captor, and are easily secured. In that way he obtained both sexes of *M. cloantha* and *M. hecuba*, and the identity of the last-named species has been verified by the capture *in coitû* made quite independently by Dr. Brauns.

I have received from Mr. Marshall and Mr. Barker both sexes of two species caught *in copulâ*. The grasp of the ♂ was not relaxed in death. The pairing takes place in the air, the male grasp-

ing the neck of the female by means of his long mandibles, and the abdomen of the latter is stretched to the utmost and held in position by the hind legs, and perhaps also by the anal spines.

I have not attempted another key for the 32 species or sexes described in this paper. I have generally compared them to species already described, and where I did not do so I have endeavoured to have the insect fairly figured.

From the little light afforded by the ascertaining of the identity of sexes, I am of opinion that nearly all the African species will be easily grouped round certain well-defined *male* forms, and that certain characters now made use of for trying to reduce that world-spread genus into something like order, will no longer be so much depended upon.

I find that in my previous paper on the South African *Mutillidæ* I have made use of names already preoccupied, and I propose, therefore, to change *Mutilla ariadna* into *M. hebe*; *M. acidalia* into *M. antigone*; *M. bellona* into *M. deiadama*; *M. cassiope* into *M. canace*; *M. clotho* into *M. liriopæ*; *M. electra* into *M. philomela*; *M. hecate* into *M. atracis*; *M. leda* into *M. autonoe*; *M. megæra* into *M. oxyroë*; *M. pandora* into *M. daphnæ*; *M. proserpina* into *M. charicloë*; and *M. tisiphonæ* into *M. thymela*.

FAMILY MUTILLIDÆ.

GEN. MUTILLA, Linn.,

Syst. natur., ed. 10a, 1758, pp. 343-582.

MUTILLA CLOANTHA, Pér.,

Annals S. Afr. Museum, i., p. 89.

Plate VIII., figs. 18, 20.

♀. Black, dotted with black and whitish hairs not densely set, the black hairs occur on the head and thorax, the white, which are silvery, are found on the basal joints of antennæ, the legs, the under side, and more sparsely on the abdomen; head nearly quadrate, much narrower than the prothorax, closely foveolato-punctate, eyes large, reaching to a short distance from the outer angle, which is slightly rounded, antennal tubercle reddish; prothorax truncate, somewhat diagonally at apex from the centre to the apical angle,

gradually amplified from the apex to the top of the declivity, where it is about one-fourth broader than at apex, slightly emarginate laterally in the median part, and with the anterior angle of the emargination distinct, abruptly truncate behind, with the metathorax divided from the mesothorax by a distinct transverse groove, closely and irregularly foveate, scrobiculate on the metathorax, with the intervals raised and forming a not very conspicuous serration on the sides; abdomen sub-sessile, first and second segments covered with very much elongated deep punctures the intervals of which are raised and somewhat strigillate; there is a narrow sub-flavescent band on the apical part of the first segment, a more or less ovate one in the median part of the second, and a band on the third and fourth; the legs are slightly rufescent, and the tibiae are bi-spinose; ventral carina of first segment carinate, truncate at both ends, and sharply spinose at apex. Length $9\frac{1}{2}$ –11 mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

MUTILLA HECUBA.

♂. Black, with the first and second segments pale red, third and fourth abdominal segments banded and with a sub-flavescent pubescence; head quadrate, nearly twice as broad as long, straight laterally with the posterior angles not rounded, eyes large, deeply emarginate but not reaching the median part of the sides, deeply and closely punctured, clothed with some dusky hairs, and in the frontal part by a very thick flavescent pubescence; thorax foveolato-punctate, and broadly foveate on the metathorax, prothorax clothed with a thick flavescent pubescence; mesothorax with two longitudinal grooves on each side of the median part, tegulae black, wings smoky, deeper at tip; scutellum raised, covered with long, dense, flavescent hairs; metathorax a little attenuate laterally behind, with the posterior angles rounded, declivous, and having a median longitudinal groove reaching from the base to a very short distance from the declivity and interrupted at tip by a transverse ridge; first abdominal segment moderately short, gradually amplified from the base, where it is dentate, and a little further distinctly angulate on each side, also very little coarctate, and not narrower at apex than the basal part of the second segment, which is slightly broader than long; both these segments are very closely and somewhat deeply punctured, and have a shagreened appearance, the other segments are finely punctured; ventral carina laminate, emarginate

in the middle, truncate at both ends and with the apical angle sharp and elongated; tibiæ spinose. Length 15 mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O’Neil, Dr. H. Brauns.

I know now both sexes of *M. cloantha* and of *M. hecuba*, caught *in coitû* and by “sembling.” I have ascertained that *M. alcyone*, Pér., is the female of *M. exaltata*, Sm. These three species, and also *M. tyro*, Pér., the female of which is yet unknown, form a very homogeneous group, both sexes of which are closely allied respectively to one another, and the species of which could be differentiated as follows :—

Males.

First and second abdominal segments red, infusate at tip.

Mesothorax with a median groove and a raised line or groove on each side; metathorax with a short median longitudinal groove interrupted by a transverse carina.

Prothorax covered with flavescent hairs, third and fourth abdominal segments with a flavescent band .. *exaltata.*

Apical edge of third abdominal segment only with a flavescent band *cloantha.*

Head, scutellum, and metathorax clothed with a flavescent pubescence, third and fourth abdominal segments banded *hecuba.*

Metathorax only covered with flavescent hairs, and having a broad longitudinal median groove rounded at tip, and not interrupted by transverse ridge, third abdominal segment banded *tyro.*

Females.

Black, with the thorax red.

Second abdominal segment with one median, round, whitish spot, third segment with a white band *exaltata.*

Second abdominal segment with one median, round, whitish spot, third and fourth segment with a white band *cloantha.*

Second abdominal segment with a moderately small, round, median spot, and on each side of it a flavescent, pubescent patch, third and fourth segments banded *hecuba.*

Female unknown.

MUTILLA PSAMMATHE.

♀. Black, with the upper part of the thorax red; covered with rigid, black and greyish hairs not closely set, third abdominal segment with a transverse yellowish white band interrupted longitudinally in the middle and not reaching the outer sides; head broader than long on the vertex, a little rounded laterally behind the eyes which are large, roughly foveate and set with a short, not thick slightly flavescent pubescence; thorax as broad as the head across the vertex, one-third longer than broad, nearly parallel but for a slight sinuation at about the median part, sloping slightly from the median part to the outer angle in front, perpendicular behind, covered with large, elongate foveæ, with the intervals raised, sharp and wavy; abdomen pyriform, sub-sessile, first joint seemingly impunctate, second covered with elongated punctures, with fine raised intervals very closely set, the first segment has no pubescent white band, but is beset principally at base with long erect greyish hairs similar to those covering the legs, sides and under side of the abdomen; the second segment has no apical pubescent band, but I am of opinion, judging by the punctuation of the apical part, that the pubescence has been rubbed; ventral carina laminate with both ends truncate and a little sharp at tip; tibiæ with a double row of spines, spurs white, pygidium very closely and finely punctured. Length $9\frac{1}{2}$ mm.

♂. Black, with the whole thorax red, clothed with dense greyish white hairs, apex of first and second abdominal segments fringed with a white pubescence, third segment entirely clothed with the same pubescence; head more than twice broader than long on the vertex, rounded a little in the posterior angles, eyes large, not emarginate, deeply and closely pitted; mesothorax with two longitudinal median grooves, tegulæ dark red, wings smoky from base to apex, scutellum much raised, nearly round, fringed with closely set, long greyish hairs, metathorax constricted at base, a little amplified behind with the posterior angles quite rounded, abruptly declivous, more broadly foveate than the pro- and mesothorax; first abdominal segment moderately long, sharply dentate on each side at base, gradually amplified from there to the apex where it is as broad as the base of the second segment which seems the continuation of it, and is very little broader than long; they are both closely punctured with smooth intervals; the ventral carina of the first segment is laminiform and truncate at both ends, and slightly emarginate in the middle; the tibiæ have one series of spines, and the spurs are ivory-white. Length 12 mm.

Both sexes resemble *M. purpurata*, Sm., the ♀ is distinguished by the thorax more parallel, not attenuated in the anterior part and less emarginate at about the median part, the elongated punctures on the second segment are also much more pronounced, and the abdomen is a little more sessile; the ♂ resembles very much that of *M. purpurata*, but the whole thorax is red, the metathorax is a little more constricted at the base, the punctures on the second segment are not so confluent, and the apical white band of the second segment is hardly interrupted in the centre.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

(FEMALES.)

MUTILLA CELIMENE,

Plate VIII., fig. 29.

♀. Ferruginous red, abdomen black with the exception of the first segment which is also red, second abdominal segment with a basal median flavescent ovate round patch and two lateral and one median arranged transversely near the apical part, the three apical segments are banded with a sub-flavescent whitish pubescence; head rounded, smaller than the thorax, eyes large, lateral, reaching further than the median part of the outer sides which are very much rounded; it is covered with a flavescent pubescence interspersed with a few rigid hairs, and is very rugose; thorax very irregularly foveolate, nearly straight at apex, slightly rounded laterally near the anterior angle, of nearly equal width from the anterior part to about the median part where it is very slightly incised, and from there slightly but gradually attenuated as far as the posterior declivity which bears a small but distinct sharp tubercle in the middle, and where it is slightly narrower than at the apical part; the sides are not serrulate, and it is covered with a flavescent pubescence; abdomen briefly sub-pedunculate, basal segment fringed with dense silky hairs forming almost a band, the second segment is a little longer than broad, covered with long, foveate punctures hidden by a dense black pubescence, from which emerge some black and greyish hairs, the pygidium is denuded and distinctly strigillate longitudinally; tibiæ with a double series of spines, spurs white. Length 7 mm.

Allied to *M. anna*, Pér., from which it differs by the shape of the thorax, which is not quite so attenuate behind, and by the arrangement of the white abdominal spots and bands which approximate very much that of *M. tettensis*, Gerst.

Hab. Mozambique (Lourenço Marques). G. A. K. Marshall.

MUTILLA OPIS.

Black, covered a brief flavescent pubescence and a few moderately long greyish hairs; antennæ rufescent, apical and basal part of legs and the whole of the tarsi rufescent; thorax red, abdomen black, and with two median flavescent patches on the second segment, all the four apical segments fringed with dense sub-flavescent hairs, not dense or short enough to form a band; head large, quadrate, but a little rounded in the posterior angles, broader than the thorax, eyes large, lateral but hardly reaching the median part of the outer sides which are straight, frontal part with two very distinct, small tubercles above the point of insertion of antennæ; the whole head is covered with closely set punctures without raised intervals; thorax sloping slightly at each side of the apex, with the anterior angles sharp and projecting, sub-parallel but a little narrowed gradually towards the posterior declivity, and slightly emarginate towards the median part; it is closely punctate, the punctures are slightly foveolate and closely set, and the sides are serrulate from the anterior angle to the bottom of the declivity; abdomen sessile, somewhat pyriform, sharply dentate at base, first segment as broad at apex as the base of the second, which is nearly as broad as long, and both covered with very closely set, small elongate punctures, the other segments are more finely punctured, and the pygidial area is finely striolate longitudinally; ventral carina of first segment laminate, sharply truncate at apex; tibiæ with a double series of spines, spurs white. Length $6\frac{1}{2}$ mm.

Very closely allied to *M. perse*, Pér.; the head, although broad, is not quite so wide, the thorax is a little more emarginate laterally, the two spots on the second abdominal segment are smaller and equi-distant from centre and outer margin, and the pygidium is very closely striolate instead of being very finely rugose.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

MUTILLA EUTERPE,

Plate VIII., fig. 10.

Head, antennæ, thorax and legs light ferruginous-red; abdomen black with a small elongate central white spot on the second segment, third joint clothed with a silky white band; head large, wider than the thorax, quadrate, as broad as long on the vertex, eyes large, lateral, reaching only the median part of the outer sides, very rugose, sub-strigillate in the anterior part of the vertex,

clothed with a whitish slightly flavescent pubescence and with hardly any erect hairs; thorax elongate, very nearly parallel, truncate at both ends with the angles sharp, outer sides pluri-dentate, edge of the posterior declivity with a spine on each side and one in the centre; it is foveolato-punctate and clothed with a very short, sub-flavescent pubescence, with the sides, and especially the declivous part, set with long, flavescent hairs; abdomen sessile, pyriform, basal segment very nearly as broad at apex as the base of the second, punctulate, second segment as broad as long and very closely punctured; the three apical segments, principally the last, are clothed with greyish white hairs which do not, however, form bands; intermediate and posterior tibiæ with a single series of spines, spurs whitish; pygidial area finely striolate. Length 5 mm.

Hab. Natal (Durban). C. N. Barker.

Easily distinguished by the shape of the head and prothorax from all the South African species having a single median white spot on the second abdominal segment.

MUTILLA ANDROMACHE.

♀. Black, covered with black hairs, greyish on the sides, the frontal part of the head and the legs, second and third abdominal segments with a slightly flavescent pubescent band fringing the former and covering the latter but broadly interrupted in the centre; head deeply and closely pitted, a little narrower than the apical part of the thorax, nearly truncate behind, but with the posterior angles rounded, eyes large, reaching beyond the median part of the sides; thorax nearly straight at apex, a little ampliased diagonally from the outer angle to about one-third of the length, where it is slightly aculeate, a little attenuate from there to the posterior declivity which is very abrupt and where it is about one-fifth narrower than the apical part, not serrulate or emarginate laterally; it is foveolate with the intervals sharp, those in the centre of the anterior part are less wavy, and sharper; abdomen sessile, first and second joint somewhat regularly strigillate; the former has no white pubescent patch and the band edging the second segment is nearly as broad as the one covering the dorsal surface of the third; intermediate tibiæ with a double series of spines, posterior ones with a single row, spurs white. Length 10 mm.

Allied to *M. horrida*, Sm.; the shape of the head, thorax, and abdomen is similar, but there is no white patch on the first

abdominal segment, and the second is fringed with an interrupted white band, which is wanting in *M. horrida*.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

MUTILLA IDIA.

♀. Black, with the thorax red, abdomen with an apical silvery white band fringing the first and second abdominal segments, and very slightly interrupted in the centre, third segment with a very short lateral band; head deeply and closely pitted, moderately truncate at base, a little rounded and amplified laterally, eyes set laterally, and reaching nearly but not quite the median part of the sides; it is clothed with a few long black bristles interspersed with shorter greyish hairs, denser on the frontal part and on the basal joint of antennæ, and is about the same width as the apical part of the thorax; mandibles long, sharp, with the inner edge tri-sinuate; thorax somewhat semicircular in front, gradually amplified from the outer anterior angle to a short distance from the median part where it is distinctly aculeate, and gradually narrowed from there to the posterior declivity, which is quite perpendicular, and less than half the width of the apical part; the outer sides have three serrations from the anterior angle to the aculeate tuberculated part, and are moderately emarginate for a very short distance behind it; it is deeply and irregularly foveolate; abdomen sub-sessile, first basal joint with a distinct, sharp lateral spine on either side, and as broad at apex as the base of the second segment which is one-fourth less broad than long; both are covered with very closely set elongate punctures with the intervals slightly raised; it is clothed with greyish and black, moderately dense, hairs, and the second and third segments have a conspicuous silky white pubescent ventral band; carina of first ventral segment laminate, aculeate at base; tibiæ clothed with densely set greyish-white hairs, spines on tibiæ very conspicuous. Length $13\frac{1}{2}$ mm.

Hab. Zambesia (? Salisbury). G. A. K. Marshall.

The shape of the thorax approximates that of *M. baucis*, Pér.; the species, however, is a very distinct one.

MUTILLA CLYTEMNESTRA,

Plate VIII., fig. 9.

♀. Black, covered with greyish-white hairs very dense on the cheeks, the frontal part of the head and the legs; thorax red, first

abdominal segment with a slightly flavescent white patch on each side, second segment with a similar apical patch placed at equal distance from the centre and the outer side, third segment with a lateral patch more elongate than the one above it and reaching nearly the outer angle but not quite in a line with the patch on the basal segment; head very broadly foveate, truncate behind, a little attenuate in front, slightly amplified laterally behind the eyes which are not very large and are placed forward, mandibles broad at apex, forcepate and bluntly tri-dentate at tip; thorax narrower than the head, elongate, gradually attenuate from the anterior to the posterior part, about one-fifth longer than broad, somewhat angulated laterally about one-third of the length, prothorax nearly truncate, outer sides very little emarginate laterally, declivity very abrupt; it is covered with foveæ with the intervals raised, sharp and wavy, but more longitudinal in the anterior median part; abdomen sessile, basal segment with a sharp basal tooth on each side, as broad at apex as the basal part of the second, which is a little longer than broad and closely but irregularly strigillate, the basal one is more roughly strigillate; the pygidium and the under side of the abdominal segments are clothed with dense greyish-white hairs; the tibiæ have two series of closely set conspicuous spines, and the spurs are ivory-white; the ventral carina of the basal segment is short and sharp and gradually sloping from base to apex. Length 13-13½ mm.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

Probably closely allied to *M. ignava*, Sm., which is not represented in the Museum Collection.

MUTILLA ÆTHRA,

Plate VIII., fig. 2.

♀. Upper part of head, antennæ, thorax, tibiæ and tarsi red, under side of head, abdomen, and femora black, second abdominal segment with a basal median flavescent, more or less round, patch and a supra-lateral one on each side, third and fourth abdominal segments with a slightly flavescent band; head closely foveolate, very quadrate in front owing to the genæ being produced in a sharp angular process, transverse on the vertex, nearly truncate behind, eyes large, lateral, reaching beyond the median part of the outer sides which are straight; it is covered with a flavescent pubescence intermingled with long black hairs; thorax nearly straight at apex with the outer angles somewhat rounded, elongate, of equal width for about one-half of the length, narrower and nearly parallel from there

to the posterior declivity which is vertical; it is closely and irregularly foveolate, and the line dividing the metathorax from the mesothorax is visible, the outer sides are not serrulate, and there is only a very small, hardly noticeable lateral tubercle at the junction of the meso- and metathorax; abdomen nearly sessile, basal joint very short, dentate on each side at the base, not so broad at apex as the base of the second segment which is nearly one-third longer than broad, and covered for two-thirds of the length with longitudinal, slightly wavy raised lines; ventral carina of first segment short, laminate, truncate at both ends, and slightly emarginate near the centre; tibiae with a very distinct double series of spines, spurs reddish; pygidium finely aciculate longitudinally. Length 8-11 mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

Belongs to the same group as *M. agave* ♀, Pér.; it is easily recognised by the quadrate form of the cheeks, which are very angular at apex.

MUTILLA THAÏS,

Plate VIII., fig. 28.

♀. Black, with the antennæ sub-rufescent for half the length, vertical part of the head with a sub-rufescent posterior patch; thorax red, abdomen with the first and second segments fringed with a narrow silky white pubescent band, second segment with an ovate white patch in the centre of the base, third segment banded with white; head a little broader than the apex of the thorax, nearly twice as broad as long on the vertex, eyes large, lateral, reaching to a little beyond the outer sides which are a little diagonal, deeply and closely pitted, and clothed with a very short flavescent pubescence and a few long black hairs; thorax elongate, straight at apex but with the outer angle a little rounded, nearly parallel for half the length, slightly and gradually, but not very conspicuously, narrowed from there to the posterior declivity where it is about one-third narrower than at apex; it is closely pitted and clothed with a very short, not dense, flavescent pubescence and a few black hairs, the outer margin is not serrulate except along the posterior declivity, the upper part of which, however, is also slightly serrulate and has a distinct median tubercle; first abdominal segment nodose, sharply dentate on each side at base, one-third narrower at apex than the base of the second one which is ovate, and both covered with very closely set, slightly elongate punctures hidden by a dense black pubescence; ventral carina of first abdominal segment long and very deeply emarginate in the centre;

tibiæ with a double series of spines, spurs whitish, pygidial area strigillate longitudinally. Length 7 mm.

Hab. Cape Colony (Port Elizabeth). Dr. H. Brauns.

MUTILLA DEIANIRA,

Plate VIII., fig. 22.

♀. Black, with the antennæ and legs rufescent, head with a rufescent patch on the vertex, thorax red, abdomen with two round flavescent patches on the second segment, equi-distant from the median part and from the outer margin, and situated a little nearer to the base than to the apex, third, fourth, and fifth segments banded with a whitish, slightly flavescent pubescence, apical segment reddish, finely strigillate longitudinally; head broader than the thorax, nearly twice as broad as long on the vertex, eyes lateral, not reaching quite the median part of the outer sides which are straight, and deeply and closely punctured; the punctures are elongate, and the whole surface is clothed with a very short sub-flavescent pubescence; the size of the rufescent patch varies, and the whole of the basal part is sometimes rufescent; thorax sub-parallel, moderately short, slightly sloping diagonally on each side at apex, emarginate laterally at about the median part, outer margins slightly serrulate; it is clothed with a by no means dense flavescent pubescence and a few long flavescent hairs, and is closely foveolato-punctate; abdomen pyriform, second segment covered with closely set punctures, slightly elongate in the anterior part; ventral carina short, sharply aculeate at apex; tibiæ with a double series of spines, spurs white. Length $6\frac{1}{2}$ mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

Allied to *M. acrisione*, Pér., but smaller; the head and the prothorax especially are much less roughly foveolate, and the intervals of the latter are not longitudinally carinate; in *M. acrisione* only the third and fourth abdominal segments have a white band.

MUTILLA DUCETIS.

♀. Black; antennæ, with the exception of the basal joint which is black, slightly rufescent, thorax red, abdomen with all the segments fringed with a narrow silky white band; head slightly narrower than the apical part of the thorax, closely foveolato-punctate, very briefly pubescent, eyes small, set much forward, genæ projecting underneath, outer sides rounded behind; thorax truncate at apex, parallel or very nearly so for half the length, and gradually narrowed from

there to the posterior declivity where it is half the width of the apex, anterior and lateral margins verrucose, that of the posterior declivity serrulate laterally, clothed with a somewhat dense flavescent pubescence, and very closely foveolato-punctate; abdomen elongate, sessile, first joint sharply dentate at base, very briefly stalked, much amplified from near the base, somewhat transverse owing to the sides being straight, second joint oblongo-ovate, and both covered with deep and closely set rough punctures; tibiæ with a double series of spines, spurs rufescent. Length 7 mm.

Closely allied to *M. aglaë*, Pér.; the sculpture, markings, and shape of abdomen are nearly identical, but the shape of the prothorax is different; it is not so elongate, is more parallel for nearly half the length, and then attenuated from there only towards the base, the outer margin is distinctly verrucose, which is not the case in *M. aglaë*.

Hab. Cape Colony (Port Elizabeth). Dr. H. Brauns.

MUTILLA DUNRODIA,

Plate VIII., fig. 17.

♀. Black, with the two basal joints of antennæ reddish, prothorax red, second segment of abdomen with two median silky yellow patches equi-distant from the centre and the outer sides, third, fourth, and fifth clothed with a slightly flavescent band, last segment rufescent, faintly striolate on the upper part; head nearly twice as broad as long on the vertex, eyes nearly lateral but with the genæ slightly projecting underneath, base sinuate in the centre, antennal tubercles well developed; it is slightly wider than the prothorax, and covered with very fine, closely set punctures; thorax with the apical margin angular on each side of the neck and with the outer angle very sharp, diagonal from the outer apical angle to about the median part, where it is deeply emarginate in a semi-circular way above the angle of the posterior declivity and there slightly narrower than at apex, the margins are distinctly carinate, and the whole surface is covered with moderately broad punctures, and clothed with a fine, decumbent, flavescent pubescence; abdomen sessile, second segment globose and covered with very closely set, round punctures; the legs are slightly rufescent, with the femora and sometimes the joints of antennæ, with the exception of the two basal ones, piceous-red; tibiæ with a double series of spines, spurs white. Length $6\frac{1}{2}$ mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

MUTILLA ELMIRA.

♀. Black, with the prothorax red, one apical silky white patch in the median part of the first abdominal segment, a supra-lateral one on each side of the second segment as well as an apical one in the middle, and a band of the same white pubescence on the third, clothed with greyish-white hairs, black on the head, which is large, as broad as long on the vertex, one-third wider than the thorax at apex, eyes not large, not lateral, genæ projecting much underneath, nearly straight at base, deeply foveate, but with the foveæ closely set, clothed with a whitish, somewhat dense pubescence; thorax short, nearly straight at apex, gradually attenuated laterally from apex to base where it is about one-third narrower, hardly emarginate laterally, covered with longitudinal carinæ, nearly parallel in the centre, more wavy laterally and sharp from the very edge of the apex to that of the declivity where they form a distinct serration, but the outer margin is serrulate right to the end of the posterior declivity; abdomen sessile, pyriform, basal joint sharply dentate on each side, second joint a little broader than long, and both strigillate; pygidium also distinctly but more closely strigillate; ventral carina of first segment short, slanting at apex; tibiæ with a double series of spines, spurs black. Length 12 mm.

Resembles in general appearance and also in markings *M. agave*, Pér., but it is easily differentiated by the shape of the thorax which is more attenuated behind, and covered with more regularly longitudinal and also sharper carinæ.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

(MALES.)

MUTILLA DICE.

♂. Black, with the thorax dull red, clothed with long greyish hairs, denser on the edge of all the abdominal segments where they form a distinct fringe but no band; head quadrate, nearly as broad as long on the vertex with the sides straight, eyes large, set in the anterior angle of the head, bulging, not emarginate and reaching only to about one-third of the length of the sides, it is very closely punctured, and the punctures are deep; thorax red, deeply foveolato-punctate with the metathorax foveate, mesothorax with two dorsal longitudinal grooves, scutellum raised, rounded, metathorax abruptly

sloping from near the base; tegulæ red, wings fumose, infusate at tip; first abdominal segment pedunculate, nodose at apex, nearly as long as the second one and planted on the top of it, both the first and second segments are closely punctured with the intervals slightly raised; tibiæ not spinose. Length 8 mm.

A close ally of *M. egeria*, from which it differs by the colour of the thorax.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

MUTILLA CLELIA.

♂. Head black, deeply and closely scrobiculate, clothed with long black setæ interspersed with a few greyish ones, nearly twice as broad as long on the vertex, with the sides parallel and the base nearly straight; eyes large, not emarginate, situated in the anterior angle of the vertex and reaching the median part of the outer side, the central part of the vertex has a small protuberance on which are situated the ocelli; thorax red on the upper part and sides and nearly hexagonal, prothorax truncate at apex, a little broader than the head, mesothorax convex, not grooved longitudinally, scutellum very prominent, rounded behind and deeply emarginate in the centre, metathorax sub-quadrate, posterior angles nearly straight; it is roughly scrobiculate, and clothed with not very dense but long black hairs turning to white on the edge of the scutellum and on the sides; abdominal segments closely foveolate, basal segment nodose, with the pedunculate part very short, implanted on the second one which is nearly orbicular, apical part of the basal and second segments with a dense, moderately narrow band of silvery white pubescence, third segment entirely white; legs clothed with long greyish-white hairs, tibiæ not spinose; wings hyaline at base for about one-third of the length, the rest fuscous; ventral carina of first segment sharp, truncate and sharply aculeate at base. Length 14 mm.

Resembles *M. mnemosides* ♂, Pér., but the thorax is much more angular laterally in the middle, and is totally red, and the third segment is clothed with a white pubescent band.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

The three species following belong to a very distinct group with black thorax, of which no ♀ is known. They are somewhat alike, and the females will very likely prove to be also very similar to one

another. The following synoptic table might help in distinguishing the species :—

A².—MESOTHORAX PRODUCED BEHIND ON EACH SIDE IN A HORIZONTAL DENTIFORM PROCESS ; FIRST VENTRAL SEGMENT WITH A LAMINATE CARINA NOT TOOTHED AT APEX, SECOND SEGMENT WITH A VERY DISTINCT VENTRAL CARINA.

*a*². Prothorax clothed with flavescent or yellow hairs.

*b*². Mesothorax with two longitudinal grooves.

Third abdominal segment with a white pubescent band *acidalia*, Pér.

No white band on any of the abdominal segments *autonoë*, Pér.

Apical part of second segment and the whole of third and fourth orange-yellow *melicerta*, Sm.

*a*¹. Prothorax not clothed with flavescent hairs.

*b*¹. Mesothorax with no longitudinal groove.

Second and third abdominal segments with a lateral white patch.. .. . *godefredi*, Sich. & Radoz.

Apex of second and the whole of the third segment white *coryphasia*, Pér.

A¹.—MESOTHORAX NOT PRODUCED BEHIND, FIRST VENTRAL SEGMENT TOOTHED AT APEX, SECOND SEGMENT WITHOUT A VENTRAL CARINA.

Third abdominal segment with a white band, interrupted longitudinally in the middle *creitsa*, Pér.

MUTILLA CORYPHASIA.

♂. Totally black, and clothed with long black hairs densely set, apical part of the basal and second segment fringed with a silky white pubescence ; head transverse, twice as broad as long on the vertex, sides straight, eyes large, not emarginate, projecting, reaching to about the median part of the outer side, very roughly punctured and clothed with densely set long black hairs without any admixture of white ones ; prothorax scrobiculate, mesothorax without any longitudinal grooves, produced behind on each side in a dentiform, slightly grooved, horizontal process, scutellum rounded, raised, metathorax sub-elongato-quadrate, posterior angles bluntly rounded ; tegulæ

black, wings with a chalybeate tinge; basal segment of abdomen petiolate, moderately long, one-third narrower at apex than the base of the second segment, the latter is orbicular, and both are covered with deep elongate punctures with strigillate intervals, the other segments are closely punctured; the ventral carina of the first segment is very distinctly laminate at the base, and the second segment which is deeply and irregularly pitted has a sharp median carina reaching from base to apex; tibiæ without spines. Length 14 mm.

Allied to *M. godefredi*, Sich. and Rad., and *M. acidalia*, Pér.

Hab. Zambesia (Lesapi River). G. A. K. Marshall.

MUTILLA AUTINOË.

♂. Totally black, with long black hairs except on the prothorax, which is clothed with densely set decumbent golden yellow hairs, the hairs on the vertex of the head are intermingled with fulvous ones; shape and sculpture of the head similar to that of *M. coryphasia*, eyes not emarginate; pro- and mesothorax closely and deeply foveolato-punctate, mesothorax with two distinct longitudinal median grooves and produced behind on each side in a dentiform process with carinate edges, scutellum raised, sub-aculeate behind, tegulæ black, wings fumose and with a slight chalybeate tinge, metathorax scrobiculate, sub-quadrate with the angles rounded; first abdominal segment short, nodose, distinctly bi-dentate at base, one-fourth narrower at apex than the base of the second segment which is rounded, very convex, and as long as broad, the first segment and the second for two-thirds of the length are deeply pitted with the intervals raised, there is no trace of any pubescent white band on any of the abdominal segments; the carina on the first and second segment of the abdomen is similar to that of *M. coryphasia*.

Allied to *M. acidalia*, Pér., and *M. melicerta*, Sm.; the shape of the abdomen is nearer to that of the last-named species.

MUTILLA ARTEMISIA.

♂. Black, clothed with dense black hairs, third abdominal segment covered with a silky white pubescent band narrowly interrupted longitudinally in the centre, the last two abdominal segments covered with a white pubescence; head transverse, roughly punctured on the vertex, straight laterally, eyes large, reaching the median part of the outer sides, emarginate, frontal parts with a few fuscous hairs; thorax roughly punctured, mesothorax much raised, and with two

moderately distinct longitudinal grooves, truncate behind, scutellum raised, rounded, a little aculeate behind; tegulæ nearly black, wings sub-chalybeate, metathorax elongate, attenuate from the median part towards the apex, foveolate and with a distinct median longitudinal ridge reaching from base to apex; first abdominal segment of abdomen moderately long, not very slender and angular on each side at base, hardly narrower at apex than the base of the second, which is rounded laterally, and one-quarter longer than broad, both these segments are closely punctured without any raised intervals; tibiæ without any spine, spurs except the anterior ones ivory-white; ventral carina of the first segment sharp and produced at apex in a distinct tooth, second abdominal segment without a carina. Length 16 mm.

This species might prove to be identical with *M. atropos*, Sm.

The resemblance with the three preceding species is quite superficial, and is due to the colour; the shape of the eyes, of the mesothorax, and of the ventral carina of the first segment is quite different.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

MUTILLA ÆDE.

♂. Head, antennæ, tibiæ, and tarsi ferruginous-red; thorax red; second abdominal segment with a supra-lateral slightly flavescent silky patch situated at about the median dorsal part, third and fourth segment with a band of similar pubescence; antennæ long, slender; head rounded laterally behind, very rugose, and clothed with a short sub-flavescent pubescence and a few long black hairs, eyes large, lateral, reaching beyond the median part of the outer sides; ocelli placed very far back and not very distinct; thorax elongate, not truncate at apex, but very little sloping and with the anterior angles rounded, nearly parallel from the anterior angle to about the median part, where it is deeply coarctate laterally as well as on the disk, posterior part, or metathorax, a little raised, convex and vertical behind, it is closely foveolate, the outer sides are not crenulate, there is a faint trace of the suture dividing the prothorax from the mesothorax, the scutellum has disappeared, and the upper angle of the lateral constriction is a little angular; above it there is a very small wart, which seems to be a rudimentary form of the tegula, and there are no wings; abdomen sub-sessile, basal segment dentate on each side, covered with elongated punctures, and at apex half the width of the base of the second joint, which is one-fourth longer than

broad, and covered for three-fourths of the length with closely set, slightly wavy longitudinal raised lines; the pygidium is quadrate, and the lateral apical spines are very short; ventral carina of first segment short, laminate, truncate at both ends, a little sharper at base than at tip; intermediate tibiæ with one spine. Length 9 mm.

This species is closely allied in general appearance to *M. proserpina* ♂, and I had at first sight taken it for the ♀ of the said species. It differs in the shape and size of the head, and also in the markings. The jaws in both these wingless males are not very much developed.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

MUTILLA PHŒBE.

Black, with the prothorax and tegulæ red, clothed with greyish hairs except on the second and the two ultimate abdominal segments where they are black; apex of first and second segments fringed with a slightly flavescent pubescent band, third and fourth segments clothed with the same pubescence; head twice as broad as long on the vertex, scrobiculate, slightly rounded on the posterior angle, eyes moderately prominent, deeply emarginate; prothorax deeply and roughly punctured, metathorax scrobiculate, mesothorax with two very distinct central longitudinal grooves, tegulæ large, wings infusate from the middle to the apex; scutellum raised, rounded laterally and behind, metathorax very sloping, rounded at the declivity; first abdominal segment short, sharply dentate on each side at base, and a little aculeate at a short distance from the basal spine, very nodose, as wide at apex as the base of the second segment which is very globose and one-fourth wider than long; both these segments are covered with closely set and deep punctures, foveate on the whole superficies of the first and on the basal and lateral parts of the second, ventral carina of the first segment slightly emarginate, truncate at apex with the upper angle sharp and projecting; tibiæ without spine, spurs ivory-white. Length 10–11½ mm.

Hab. Cape Colony (Port Elizabeth), Dr. H. Brauns; (Uitenhage), Rev. J. A. O'Neil.

MUTILLA CHLORIS.

♂. Totally black, with the tegulæ red, clothed with erect dense white hairs, first and second joints of abdomen with a fairly broad silky white band, third joint entirely clothed with the same silky

white pubescence ; head transverse, one-third broader than long on the vertex, deeply punctulato-scribulate ; eyes large, deeply emarginate, and reaching a little past the median part of the sides ; thorax and scutellum deeply foveolate, prothorax broad, divided from the thorax by a very deep sulcus, mesothorax moderately convex, scutellum convex, broader than long, sloping, slightly rounded laterally behind and hardly emarginate, metathorax quadrangular but with the posterior angles a little rounded ; abdomen with the first and second segments covered with closely set, round punctures, basal joint nodose, briefly pedunculate, two-thirds narrower at apex than the second segment at its widest part, the latter round, as broad as long ; ventral carina of first segment, sharply aculeate, almost sub-dentiform at tip ; legs covered with white hairs, tibiæ not spinose, spurs of the intermediate and posterior legs white ; wings slightly infusate from base to apex. Length 8 mm.

This species should come in the vicinity of *M. maja*.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

MUTILLA DAPHNE.

♂. Black, with the prothorax and the upper part of the mesothorax and the scutellum red, clothed with greyish hairs turning to silvery white in the frontal part of the head and on the scutellum, apical part of the first and second segments fringed with a band of silvery-white pubescence, third segment entirely clothed with the same white pubescence ; head transverse, nearly twice as wide as long on the vertex, sides straight, outer angle moderately sharp, eyes large, not emarginate, reaching a little beyond the median part of the outer sides ; thorax foveolate, the foveolæ very closely set, mesothorax with a median raised line ; tegulæ very large and elongate, wings fumose from a short distance of the base, scutellum raised, rounded, metathorax deeply foveato-scribulate, a little attenuate behind but with the sides not quite rounded, and very declivous ; basal abdominal segment short, sharply bi-dentate at base, amplified from the base, as broad at apex as the base of the second segment, which looks as if it were the continuation of it, is globose, and one-third broader than long, both are deeply foveate, the foveæ being smaller in the central part of the second segment ; ventral carina laminate, the lamina moderately short and truncate at both ends ; tibiæ not spinose, spurs infusate. Length 12 mm.

Not unlike at first sight *M. clelia*, but the thorax is not so

hexagonal, the colour of the metathorax differs, the first abdominal is not so long, and is much amplified from the very base.

Hab. Zambesia (Umsheki, Mashonaland). G. A. K. Marshall.

MUTILLA CYTHERIS.

♂. Black, clothed with whitish hairs, very dense and silky in the frontal part, the prothorax and the basal part of the metathorax; first and second segments of abdomen red, the others black; the basal joint is fringed with a white apical band, the second segment has an elongate transverse white patch on each side, and all the other segments have a moderately broad white band deeply emarginate in the centre; head closely and deeply punctured as in the preceding species, eyes large, emarginate; prothorax deeply and closely punctured, the punctures coarser and broader in the metathorax; mesothorax with a longitudinal raised line reaching the apex and two shorter grooves on each side; scutellum raised behind in an erect, conspicuous tooth and fringed with long white hairs, tegulæ black, wings smoky, the anterior ones with a blue tinge; metathorax a little constricted at base, rounded laterally behind, and having a supra-lateral carina on each side and a median grooved one in the centre; abdomen as in *M. persephone* but a little more pyriform; sculpture identical, ventral carina of first segment truncate in front and behind and aculeate at apex, tibiæ without spines, spurs ivory-white. Length 15 mm.

A close ally of *M. histrio* ♂, Lep., and also of *M. themis*, Pér., ♂; it differs mostly from the former in having the head, prothorax, and metathorax covered with a dense white silky pubescence, and the ventral carina of the first segment is a little more aculeate and truncate at base. I was somewhat doubtful about the ♀ of *M. themis*, Pér., being what it had purported to be; but now that I know the ♂ of *M. persephone*, the ♀ of which has white markings similar to that of *M. themis* ♀, I have no doubt of its identity, because the ♂ of *M. persephone*, *M. histrio*, *M. themis*, and *M. cytheris* belong to a very homogeneous group; and although the ♀ of *M. histrio* and *M. cytheris* are not yet known, they will in all probability prove to have markings similar to those of these two species. It is also quite possible for *M. penelope* to be the ♀ of the present species.

Hab. Zambesia (Salisbury).

MUTILLA PERSEPHONE, Pér.,

Annals S. Afric. Museum, i., p. 69.

♂. Black, covered with dense black hairs, second segment of abdomen red, with the apical part infusate; head very deeply and closely foveolato-punctate, more than twice as broad as long, outer sides narrowed diagonally, eyes very large, deeply emarginate; thorax closely foveolato-punctate, metathorax scrobiculate, prothorax very narrow in the median part, mesothorax reaching very far forward, quadri-canaliculate longitudinally in the centre, and with a median longitudinal raised line extending from base to apex; the grooves short, interrupted at some distance from the apex; tegulæ very dark brown, wings deep fuscous, anterior ones with a steel-blue tinge or steel-blue, scutellum produced behind in an erect, conspicuous tooth, metathorax with a sharp supra-lateral carina on each side, and a canaliculated one in the centre reaching from base to apex; first abdominal segment moderately long, gradually amplified from the base to the apex, where it is not narrower than the base of the second one, which is as broad as long, and covered on the sides and base with round punctures, deep but not closely set, and with the intervals smooth, but the central part is quite smooth, and has a median longitudinal line; the first segment is covered with moderately deep punctures, while the others are finely punctured; ventral carina of first segment not much developed, slightly toothed at base; tibiæ without spines, spurs whitish. Length 12-15½ mm.

In an example from Malvern (Natal) taken *in coitû*, the ♂ has a very well-defined white pubescent band broadly interrupted in the centre on the third abdominal segment of the same shape and size as that of the ♀. In two examples from Zambesia—one of them also caught *in coitû*, this band is altogether wanting.

Hab. Natal (Malvern), C. N. Barker; Zambesia (Salisbury), G. A. K. Marshall.

*Synopsis of Males of the Group of M. erinnys, Pér., and
M. angulata, Sm.*

Body black, with the thorax totally or partly red, scutellum quadrate, a little emarginate behind in the centre, and with the outer angles produced in a horizontal tooth; abdomen sessile, with two white patches on the first segment, and one or two always more or less interrupted in the centre on the second or third segments, or on both; fore-wings with two-cubital cells.

A².—AN INTERRUPTED WHITE BAND ON THIRD SEGMENT, NO VENTRAL CARINA ON SECOND SEGMENT.

Pro- and mesothorax and scutellum red *tommyris*.

Mesothorax and scutellum red *dido*.

A¹.—AN INTERRUPTED WHITE BAND ON SECOND AND THIRD SEGMENTS.

α³. Thorax wholly red.

Second abdominal segment with a ventral carina, metathorax very angular laterally behind *clymeneis*.

Second abdominal segment without a ventral carina, metathorax not projecting behind *eunomia*.

α². Pro- and mesothorax red, metathorax black.

Second abdominal segment with a conspicuous erect tooth *erinnys*.

Second abdominal segment without tooth or carina *cleopatra*

α¹. Mesothorax and scutellum red.

Second abdominal segment without carina *angulata*.

MUTILLA DIDO.

♂. Black, with the mesothorax and the tegulæ somewhat dark red, clothed with moderately dense black hairs somewhat greyish on the declivity of the metathorax; first abdominal segment with a lateral silky white patch, third segment with a band of the same pubescence distinctly interrupted in the centre; head more than twice as broad as long on the vertex, sides straight, eyes large, deeply emarginate and reaching the median part of the sides, it is very closely foveolato-punctate; thorax closely foveolato-punctate with the metathorax scrobiculate, mesothorax without any groove, scutellum as in the three preceding species, tegulæ dark red, wings fumose, a little darker on the anterior margin of the fore-wings; metathorax abruptly declivous behind, with the margin of the outer sides sharp and the posterior angle also sharp, but not projecting; abdomen nearly sessile, basal joint of abdomen sharply dentate on each side at base, amplified from there, not quite so broad at apex as the base of the second joint, which is one-fourth longer than broad and covered like the first with closely set, deep, elongate punctures separated by irregular, wavy, not much raised carinæ, ventral carina

of first segment sharply conical at each end, or deeply notched in the centre; tibiæ not spinose. Length 10 mm.

Hab. Natal (Durban). C. N. Barker.

MUTILLA TOMYRIS.

♂. Black, with a red patch on the vertex of the head and the pro- and mesothorax red, clothed with greyish and brown hairs, basal joint of abdomen with a lateral whitish patch, third segment with a lateral white band; head very roughly foveolate, almost scrobiculate, sub-quadrate, eyes large, deeply emarginate, reaching to about the median part of the sides; thorax closely foveolato-punctate, scutellum and metathorax scrobiculate, tegulæ red, wings pale brown, shape of the scutellum similar to that of *M. dido*; abdomen sessile, first abdominal segment near straight laterally and not so broad at apex as the base of the second one, and both covered with deep, elongate punctures, separated by irregular, carinated intervals; ventral carina of first segment not quite straight, and sharp at tip at the base, no ventral carina on second segment; tibiæ with one or two spines. Length 12 mm.

Hab. South Africa (no exact locality).

MUTILLA CLYMENEIS.

♂. Black, clothed with dense long greyish and black hairs, thorax red, first basal segment with a patch of white pubescence on each side midway between the centre and the outer side, apical part of second segment and the whole of third segment with a white band broadly interrupted in the centre; head quadrate, scrobiculate, clothed with white and black hairs, eyes large, deeply emarginate, reaching beyond the median part of the outer sides; thorax irregularly foveolate, metathorax scrobiculate, scutellum of the same shape as the preceding species, and fringed with somewhat dense, long, greyish-white hairs; tegulæ red, elongate, wings fuscous brown, hyaline at base, metathorax parallel, abruptly truncate, outer sides sharp, distinctly carinate from the median part to the angle which is distinctly aculeate and projecting, the perpendicular declivity is very dark brown, nearly fuscous; abdomen sessile, basal joint deeply and closely punctured except at the apex, which is quite smooth, a little narrower than the base of the second joint, second segment longer than wide by one-fourth, and covered with deep, elongate foveolate punctures, with the intervals irregular and raised; ventral

carina deeply emarginate in the centre, not truncate at apex, and produced in a short, sharp spine at base, second segment with a ventral slender ridge; tibiæ not spinose. Length 13 mm.

Closely allied to *M. eunomia*, differs in the colour of the wings, the more angulate and more projecting posterior angles of the metathorax, the different shape of the ventral carina of the first segment, the presence of a median ventral carina on the second segment, and the distinct interruption of the two dorsal abdominal white pubescent bands.

Hab. Zambesia (Salisbury). G. A. K. Marshall.

MUTILLA EUNOMIA.

♂. Black, clothed with long dense black hairs; pro- and mesothorax, scutellum, and tegulæ red, first abdominal segment with a silky white apical band narrowly interrupted in the centre, second segment also with a white apical band slightly interrupted in the centre, third segment with a broad, not interrupted band; sculpture of the head and thorax similar to that of *M. cleopatra*, but the metathorax is not quite so parallel, owing to the outer apical part being slightly amplified and produced outwardly, and the angle itself not being sharp and projecting; the shape and sculpture of the abdomen are similar, but the band on third segment is hardly if at all interrupted, and the ventral carina of the first segment is acutely toothed in the middle and emarginate near the apex. Length 13 mm.

Hab. Zambesia (? Salisbury). G. A. K. Marshall.

MUTILLA CLEOPATRA.

♂. Black, clothed with long dense black hairs, pro- and mesothorax dark ferruginous, with the scutellum nearly black, apical part of the basal and second abdominal segments and the whole of the third with a white band broadly interrupted longitudinally in the centre; head quadrate, nearly twice as broad as long on the vertex, foveolate, frontal part clothed with greyish hairs with longer black ones intermixed, eyes very large, deeply emarginate, and reaching beyond the median part of the outer sides, which are straight; thorax elongate, closely foveolate with the metathorax nearly scrobiculate, prothorax truncate at the apex, very little rounded laterally; mesothorax without any longitudinal groove; tegulæ red, wings fumose, and with a darker elongate spot near the stigma; scutellum trans-

verse, straight laterally with the posterior angles produced in a spine, and the posterior margin slightly emarginate in the centre, fringed with very long greyish and white hairs; metathorax with the sides parallel, abruptly truncate behind, and with the posterior angles sharp and distinctly aculeate; abdomen short, sub-sessile, first segment amplified suddenly from near the base, where it is slightly dentate on each side, as broad at apex as the base of the second one, which is amplified and reaches its greatest width at some distance from the base, and is longer than broad; both these segments are covered with broad punctures somewhat elongated and with the intervals nearly smooth, the other segments are minutely punctured; ventral carina of the first segment laminate, truncate at both ends, second segment not carinate in the centre; tibiæ not spinose, spurs white. Length 15 mm.

Hab. Zambesia (Salisbury, Umsheki River). G. A. K. Marshall.

MUTILLA TAURICEPS, Kohl,

Verh. Zool. Bot. Ges. Wien, xxxii., 1882, p. 484, pl. 23, ff. 15 and 16.

♂. Black with the pro- and mesothorax and also the scutellum dull red, posterior part of the head rufescent; head large, quadrate, closely aciculate, eyes elongate, not emarginate; mandibles long, falcate and trifid at tip; antennæ sub-filiform; mesothorax with two conspicuous longitudinal median grooves, scutellum convex, rounded, metathorax sloping behind, rounded laterally and foveate; abdomen pyriform, conical from the base of the second segment, first segment short, conical, and with a sharp spine on each side of the base and without any ventral carina; the segments are clothed with long dense hairs, black above, greyish underneath; intermediate and posterior tibiæ without spines; wings slightly fuscous. Length 9 mm.

In this species the extraordinary forcipate shape of the mandibles, which are trifid at tip, is the same in both sexes.

Captured by Dr. H. Brauns at Sunday's River, Uitenhage District, Cape Colony.

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Hélio G. Dujardin, Paris

New Mutillidæ

X.—*Description of a New Genus of Perciform Fishes from the Cape of Good Hope*.—By G. A. BOULENGER, F.R.S.

(With Plate IX.)

ATYPOSOMA, g. n.

Body compressed; scales small, finely ciliated; lateral line complete. Mouth large, moderately protractile; maxillary large, exposed; jaws equal, with a band of small villiform teeth; preopercle very finely serrated; no opercular spine. Gill-membranes separate; seven branchiostegals; gill-rakers very long. A single dorsal, with 11 spines and 17 soft rays, the spinous portion well developed, but shorter than the soft; anal with 3 spines and 14 soft rays; soft dorsal and anal thickly covered with small scales. Caudal forked. Pectoral with 17 rays, asymmetrical, rounded, upper rays longest. Ventrals behind base of pectorals, close together, with a strong spine.

This genus, referable to the Scorpidine *Squamipinnes*, is nearest allied to *Atypichthys*, Günther, from which it is distinguished by the large mouth and large maxillary. I regret to be unable to say anything of the palatal dentition, the palate being absent in the stuffed specimen.

ATYPOSOMA GURNEYI, sp. n.

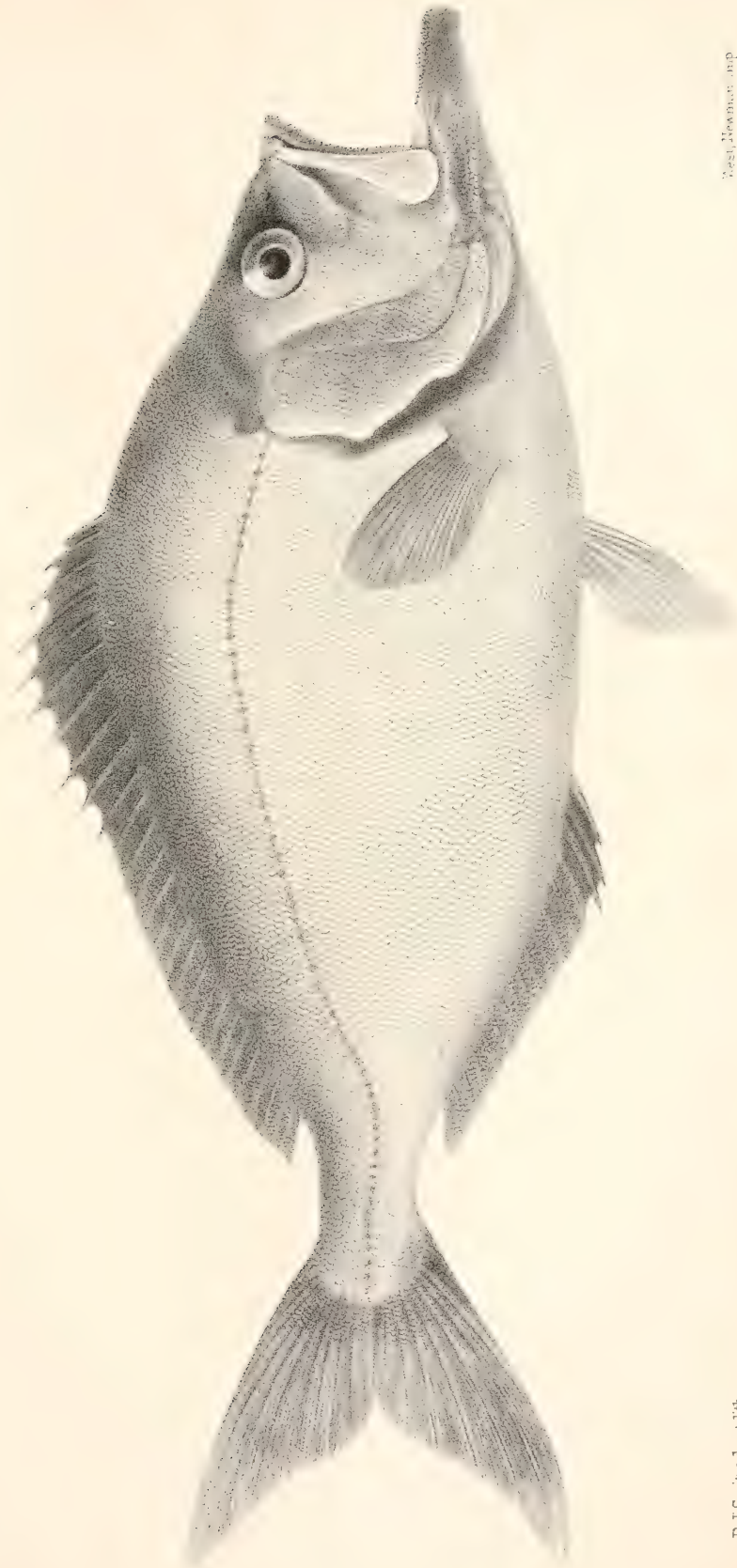
Depth of body $2\frac{1}{2}$ times in total length, length of head $3\frac{3}{8}$. Diameter of eye 5 times in length of head, $1\frac{1}{2}$ in interorbital width; maxillary scaly, extending to below anterior third of eye, the diameter of its distal extremity $\frac{3}{4}$ that of eye; preopercular border forming a right angle, rounded and very finely serrated at the angle; head nearly entirely covered with very small scales. Dorsal xi 17, originating above base of ventral; spines rather strong, 3rd

to 6th longest, $\frac{1}{3}$ length of head, nearly twice as long as soft rays, which are all equal in length. Anal iii 14; 2nd and 3rd spines equal, $\frac{1}{4}$ length of head, $1\frac{1}{2}$ as long as the soft rays. Pectoral $\frac{1}{2}$ length of head, slightly shorter than ventral; latter reaching vent. Caudal deeply forked, middle rays $\frac{1}{4}$ length of outer. Caudal peduncle twice as long as deep. Scales $150\frac{2.5}{6.0}$; lat. l. 70. Silvery; dark purplish grey on the back; lateral line, dorsal and anal fins, and caudal fin blackish; tips of longest dorsal spines white; pectorals grey; ventrals white.

Total length 450 mm.

I am indebted to Mr. W. L. Slater for the loan of the single specimen, now in a stuffed condition. It was caught by a trawler in False Bay, and presented to the South African Museum by Lieut.-Commr. A. F. Gurney, R.N.

Parascorpiis, Blkr., likewise from the Cape of Good Hope, and known to me only from the description and figure, appears to be related to this genus, so that its allocation to the *Scorpidina*, as proposed by Bleeker, may after all be correct. But it differs generically in the presence of an opercular spine and the reversed proportions of the two divisions of the dorsal fin. So far as specific characters go, *Parascorpiis typus* differs abundantly in the number of dorsal rays (xii 15), the shorter dorsal spines, the longer second anal spine, the narrower and serrated preorbital, the more strongly serrated preopercle, the more prominent chin, and the feebly notched caudal fin. The spinous dorsal and the caudal fins are represented as covered with scales, which is not the case in the fish here described.



West, Newbury and

Atyposoma gurneyi, *gen. et sp. nov.*

P. J. Smit ad nat. lith.

ANNALS

OF THE

SOUTH AFRICAN MUSEUM.

PART III.

XI.—*New and Little Known South African Solijugæ in the Collection of the South African Museum.*—By W. F. PURCELL, Ph.D., *First Assistant.*

THE present paper contains descriptions of ten new species of *Solpuga*, and of five little known forms of the genus, which were described by Koch in 1842; further, four new species of *Daesia*, and three of *Ceroma*, both genera not previously recorded from South Africa, and one new species of *Hexisopus*. The male of the last-named remarkable genus is here described for the first time.

The following is a synopsis of the South African genera:—

- a.* Tarsus of IV. leg without claws *Hexisopus*, Karsch (p. 381).
- b.* Tarsus of IV. leg with two claws.
 - a*¹. Tarsi of II.–IV. legs 2-jointed *Ceroma*, Karsch (p. 394).
 - b*¹. Tarsi of II.–III. legs 2-jointed, of IV. leg 4-jointed. *Daesia*, Karsch (p. 388).
 - c*¹. Tarsi of II.–III. legs 4-jointed, of IV. leg 7-jointed. *Solpuga*, Licht. (p. 401).

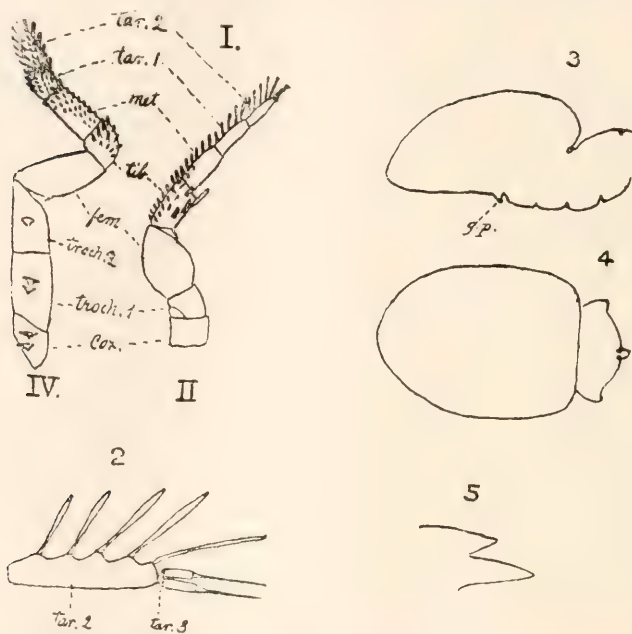
GEN. HEXISOPUS, Karsch.

1842. *Aclopus*, C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 354.

1879. *Hexisopus*, Karsch, Ent. Zeit. Stettin, xl., p. 109.

Characters.—Thorax and abdomen enormously distended above and indistinguishably united to a single oval piece (the thoraco-abdomen), lying above the posterior pairs of legs. Palps short and thick, the tarsus immovably fused with the metatarsus, which is without spines or scopula. I. leg thin and slender, unarmed and

without claws. II. and III. legs (fig. 1 II.) with 7 and 8 free segments respectively (the II. with 1, the III. with 2 trochanter segments); the femora (sixth segment from the distal end) short and very stout, especially in the male, with convex surfaces; the terminal tarsal segment extremely minute, bearing a pair of long, smooth, two-jointed claws, and often hidden amongst the hairs of the preceding segment, the distal joint of the claws subequal to



Herisopus lanatus (Koch). Fig. 1, II. and IV. right leg of ♀, seen from below (the anterior side is on the right, the posterior on the left of each figure). Fig. 2, distal joints of II. leg of ♀, seen from above, and much magnified. Fig. 3, median section of ♂ in outline, g.p. genital papilla. Fig. 4, outline of same ♂ seen from above. Fig. 5, rostrum (the stiff hairs at the apex not sketched in).

or even longer than the basal joint (fig. 2); no subungual appendages. IV. leg with 7 free segments (including 2 trochanter segments); the femur (third free segment) sub-cylindrical; the tibia very short, functioning as patella; metatarsus tibia-like; tarsal segments 2, without claws (fig. 1 IV.). Ocular tubercle much more prominent anteriorly in the male than in the female, provided with numerous hairs. Flagellum of male hidden between the mandibles, the basal portion enlarged in the form of an open cup,

which is attached at a point on its convex side to the inner side of the mandible, and is movable in a vertical plane round the point of attachment (fig. 6). Spiracles 4, large, exposed, situated on the II. and III. ventral abdominal segments near their hind margins, the anterior pair a little closer together than the posterior pair. I. abdominal segment of the adult male provided below with a large, sub-conical, genital papilla (fig. 3, *g.p.*), bearing at its apex the sexual orifice. Ribbed area on inner face of mandibles very large, the ribs very long, extending right up to the base. Rostrum short, the upper lobe evenly pointed and not deflexed at the apex (fig. 5), with the usual double row of adhering hairs at the apex below (not drawn in the figure); the two lower lobes of the rostrum contiguous to the apex, much longer than the upper lobe, strongly compressed laterally, hairy, and furnished with the usual pair of sub-apical feathery lingulæ.

The above diagnosis of the genus applies to the two species described below, and probably also to *H. fodiens* Sim., which is unknown to me. The enormous thoraco-abdomen is very peculiar, and is similarly formed in the adult male and female and in the young. Although the tergal segments are distinctly demarcated by transverse lines, it is not easy to point out which of these lines forms the boundary between the thoracic and the abdominal terga. The anterior side of the thoraco-abdomen rises almost directly from the hind edge of the head-plate, which it slightly overhangs (see figs. 3 and 4). Five malleoli are present on each hind leg in the adult, viz., two on the coxa, two on the first trochanter joint, and one on the second trochanter joint (fig. 1 IV.). In the young specimen of *H. lanatus* (Koch), measuring $13\frac{1}{2}$ mm. in length, only three are present, viz., two on the coxa, and one on the first trochanter joint. According to Simon, *H. fodiens*, Sim., has only three malleoli, and this statement has been utilised by Pocock in characterising his new family *Hexisopodidæ* (Ann. Mag. N. H. (6), xx., p. 250, 1897). Simon's specimen is, however, evidently immature, the length of the specimen in the figure being given by a line measuring not quite 14 mm.* (Ann. S. Ent. Fr. (6), vii., Pl. vi., figs. 6 and 7†, 1887).

The principal points in which these remarkable Arachnids differ

* In the text, however, the length is given as 23 mm., but this may be a misprint for 13 mm.

† A peculiarity of these two figures of Simon's should not be passed unnoticed, viz., the omission of the first tarsal segment in the II. and IV. pairs of legs, although it is plain from the text that this segment should be present. In fact, the segmentation of the legs in *fodiens* is evidently similar to that of *lanatus* and *crassus*.

from the Solpugidæ may be summed up as follows: (1) the absence of one joint of the trochanters in each leg of the three posterior pairs; (2) the absence of claws in IV. leg; (3) the extreme shortness of the distal portion of IV. leg in proportion to the basal part (trochanters+coxa); (4) the length of the distal segment of the claws in the II. and III. legs; (5) the minuteness of the third tarsal segment in these legs; (6) the absence of subungual appendages in these legs; (7) the presence of a genital papilla in the male; (8) the shortness of the upper lobe of the rostrum.

The females of the two Cape species known to me may be distinguished as follows:—

- a. Upper fang of mandibles strongly compressed laterally, sharp-edged above.
 Bushmanland *H. lanatus* (Koch)
 b. Upper fang thick, rounded and simply convex above. Worcester.
H. crassus, n. sp.

HEXISOPUS LANATUS (Koch).

(Figs. 1-7b.)

1842. *Aellopus lanata*, C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 354.

1848. *Aellopus lanata*, C. L. Koch, Die Arachn., xv., p. 102, fig. 1489.

*Colour** yellow to whitish yellow, the terminal fangs of the jaws red with black tips and edges; eyes with a black ring round each. *Pubescence* remarkably soft, very thick, covering whole animal, the shorter hairs mostly reddish, the longer ones mostly paler; the hairs on the anterior thoraco-abdominal segments dark brown; tips of the palps with orange-brown hair in the ♀; the anterior part of the head-plate and the ocular tubercle with a number of short black hairs in the ♂, which are absent in the ♀ and young; no spines or spiniform setæ on the head-plate or mandibles. *Ocular tubercle* projecting far beyond the anterior margin of head-plate in the ♂, but less prominent in the ♀, a line joining the anterior margins of the eyes lying behind the middle of the tubercle in the ♂, but in the middle in the ♀ (figs. 6a and 7a).

Mandibles in ♀ and young (figs. 7, 7a) stout and rather short, the hairless area at the base of the upper fang large, bordered by a semi-circle of small red granules and nearly smooth; terminal fang of upper jaw strongly compressed laterally, curving outwards and

* These specimens, which I had described as new, were kindly identified from Koch's type by Prof. K. Kraepelin.

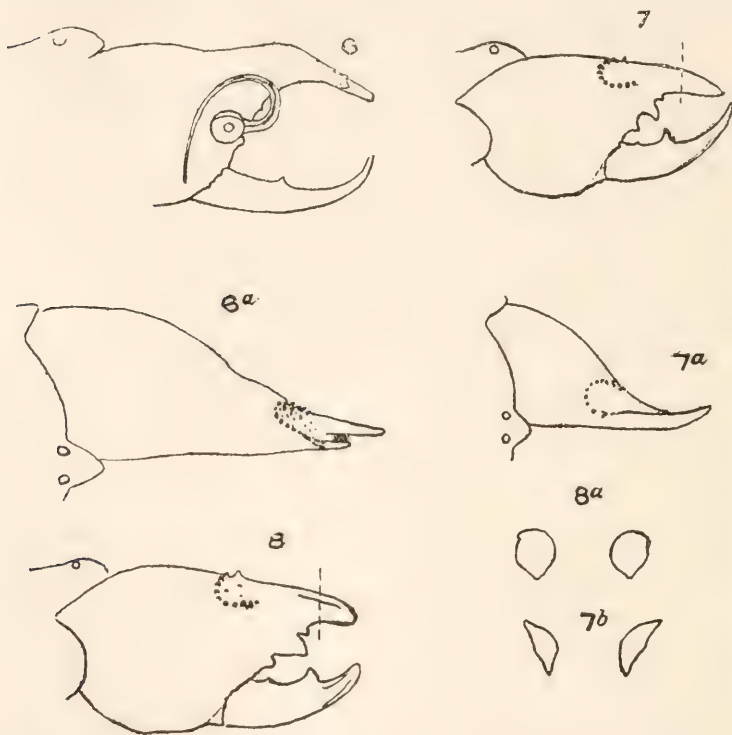
directed slightly downwards from the base, the outer side strongly flattened and not vertical but inclined upwards and outwards from the inferior to the superior edge of the fang (see fig. 7*b*); inner surface of the fang strongly convex, subangular longitudinally along the middle, from whence the surface strongly slopes upwards and outwards as far as the superior edge, the upper surface being horizontal only quite at the base; superior edge of fang sharp, forming the highest part of the upper side. Upper jaw with 3 teeth in the single series, the first very small, the second very large, the third rather small; the double series composed of 3 small inner teeth, and about 9 very minute outer ones, all placed very far back, extending round the base of the lower jaw. Lower jaw curved outwards and strongly upwards towards the apex, with 2 teeth, the anterior tooth large, the posterior one minute (in one of the jaws the large tooth bears a minute denticle at its base in front; see fig. 7).

Mandibles in ♂ (figs. 6, 6*a*) much larger and stouter, the area at the base of the upper fang small and minutely granular over its surface; terminal fang directed downwards but scarcely outwards, compressed and rather flat on each side, not sharp-edged above; the basal half of the fang strongly dilated inwards, the dilated part sulcate above, with the upper median edge granular, terminating anteriorly in a strong angle against which the lower jaw closes. Upper jaw with two small, isolated, posterior teeth in the single series, the uppermost very minute, situated alongside of the anterior bend of the flagellum (both teeth are shown in fig. 6, one above and one below the procurent portion of the flagellum); the double series composed of 3 inner and about 7 outer teeth, and very far back. Lower jaw long, curved strongly upwards but not at all outwards, with one low tooth in the middle.

Flagellum completely hidden between the mandibles. Basal enlargement in the form of a thin-walled cup with thin circular rim and movably attached at the centre of the convex surface to the lower part of the inner face of the upper jaw, almost just behind the lowest of the two teeth in the single series; concavity of the cup facing inwards and partially covered by a narrow thin lamina in the upper part. From the anterior edge of the cup a procurent portion of the flagellum, exceeding the diameter of the cup in length, takes its origin and is provided along its lower edge with a high, thin keel. On about a level with the hind edge of the granular area at the base of the upper fang the flagellum curves upwards and then backwards, as in *Solpuga*; the recurrent portion subulate, curving downwards posteriorly and

terminating just behind the base of the lower jaw at a little distance behind the basal cup, its upper side feebly sulcate, the sulcus continued over the anterior curve, the outer wall of the sulcus higher than the inner and continuous with the inferior keel of the procurrent portion.*

Palp and legs in ♀.—Palps stout, unarmed; I. leg very slender,



Hex. lanatus (Koch). Fig. 6, left mandible of ♂ from inner side. Fig. 6a, left mandible of ♂ from above. Fig. 7, right mandible of ♀ from lateral side. Fig. 7a, left mandible of ♀ from above. Fig. 7b, section through the terminal fangs of both upper jaws of ♀ at the dotted line in fig. 7.

Hex. crassus, n. sp. Fig. 8, right mandible of ♀ from lateral side. Fig. 8a, section through the terminal fangs of both upper jaws of ♀ at the dotted line in fig. 8.

unarmed; II. and III. legs robust (figs. 1 II. and 2), provided along the upper posterior margin from the tibia onwards with a row of blunt spines, which are very short and stout on the tibia, but increase regularly in length distally, the longer ones spatulate,

* A very similar sulcus and keel occurs in *Ceroma*.

those on the second tarsal joint slender; besides these there are a number of similar spines on the posterior and under side of the tibia, the upper ones being very short, the inferior long and spatulate; posterior side of metatarsus of III. leg with a few short, stout, dark spines; posterior side of metatarsus of II. leg, and of the first tarsal joint of III. leg with a few very minute spinules; metatarsus and first two tarsal joints of II. and III. legs with a row of stout bristles below (not sketched in the figures). Femur of IV. leg (fig. 1 IV.) with some stout bristles and a few short apical spines below, tibia and metatarsus with numerous very short, stout spines on the under and anterior sides, the apical ones longer, the two tarsal joints with similar spines below but, in addition, bordered along the anterior and posterior edges with a row of longer very strong spines, the spines of the anterior row stronger than those of the posterior row. In ♂.—Very similar to the ♀, except that the spines of the anterior row on the tarsus of IV. leg are much longer and slenderer than in the ♀.

Locality.—(a) One ♂ and 1 ♀ from Grasmond, on the road between Steinkopf and Ramonds Drift, Namaqualand Div. (Max Schlechter, Nov., 1897).

(b) 1 juv. from Vuurdoord, near Ramonds Drift, Bushmanland, Namaqualand Div. (Max Schlechter, Dec., 1897).

Measurements.—Total length ♂ 20, ♀ $19\frac{1}{2}$; length of thoraco-abdomen ♂ $13\frac{1}{2}$, ♀ $12\frac{1}{3}$, width ♂ $10\frac{1}{2}$, ♀ 9, height ♂ $8\frac{1}{2}$, ♀ $7\frac{1}{2}$; length of head-plate ♂ $4\frac{1}{4}$, ♀ 4, width ♂ $6\frac{1}{4}$, ♀ $5\frac{3}{4}$; length of mandibles ♂ $6\frac{1}{2}$, ♀ $4\frac{2}{3}$, width ♂ $3\frac{1}{4}$, ♀ $2\frac{2}{3}$.

HEXISOPUS CRASSUS, n. sp.

(Figs. 8, 8a.)

Very similar to the ♀ of *H. lanatus*, from which it differs mainly as follows:—

Hairs pale yellowish, none reddish, those at the anterior end of the thoraco-abdomen slightly brownish, the hairs at the apex of the palps darkened but not orange.

Head-plate relatively shorter and wider.

Mandibles with the oval area at the base of the upper fang weakly granular over its surface, the marginal circle of granules coarser and more numerous. The upper fang stout, much less compressed, slightly curving outwards and downwards; the inner surface evenly convex; the upper surface wide, evenly convex, neither sulcate,

carinate, nor angular; the outer surface convex, sub-angular along its middle, finely caniculate at base just under the upper edge; the teeth as in *lanatus*. Lower jaw curved slightly outwards and also upwards, but much less strongly than in *lanatus*. In both upper and lower jaw the apex is very blunt, but this is probably due to age and wear.

Spines on legs as in *lanatus*.

Measurements.—Total length 25; length of thoraco-abdomen 18, width 13, height 12; median length of head-plate $4\frac{1}{3}$, width $6\frac{3}{4}$; length of mandibles 5, width $2\frac{3}{4}$.

Locality.—A single ♀ from Worcester (*J. Lycett*, No. 1033).

GEN. DAESIA*, Karsch,

1880, Arch. f. Naturg., xlvii., Bd. i., p. 234.

Characters of the South African Species.—Basal segmentation of legs as in *Ceroma* and *Solpuga*, i.e., with two trochanter joints in the II. and three in the III. and IV. legs. Tarsi of II. and III. legs two-jointed, that of IV. leg four-jointed, the subungual appendages small, not diverging. Tarsus of I. leg without claws in either sex. Tarsus of palp very slightly movable in the ♀ (apparently immovable in the single ♂ specimen), the metatarsus not scopulate, but provided below with 3 short outer and 1 (in the ♀) or 3 (in the ♂) short inner spines, and generally also some much longer spines or spiniform setæ in a row with the short spines; † metatarsus distinctly compressed from above and below, appearing sub-fusiform when viewed from the side, being slightly thicker in the middle than at the ends (fig. 10a). Ocular tubercle with several bristles in front. Flagellum of ♂ with the basal enlargement flat, not turgid, produced posteriorly into the shaft and fixed to the inner side of the mandibles behind the base of the terminal fang in such a manner as to be partially movable in a vertical plane round the point of attachment (as in *Hexisopus*). Upper lobe of rostrum (fig. 9c) not deflexed at the apex but evenly pointed, as in *Solpuga*.

DAESIA LEIPOLDTI, n. sp.

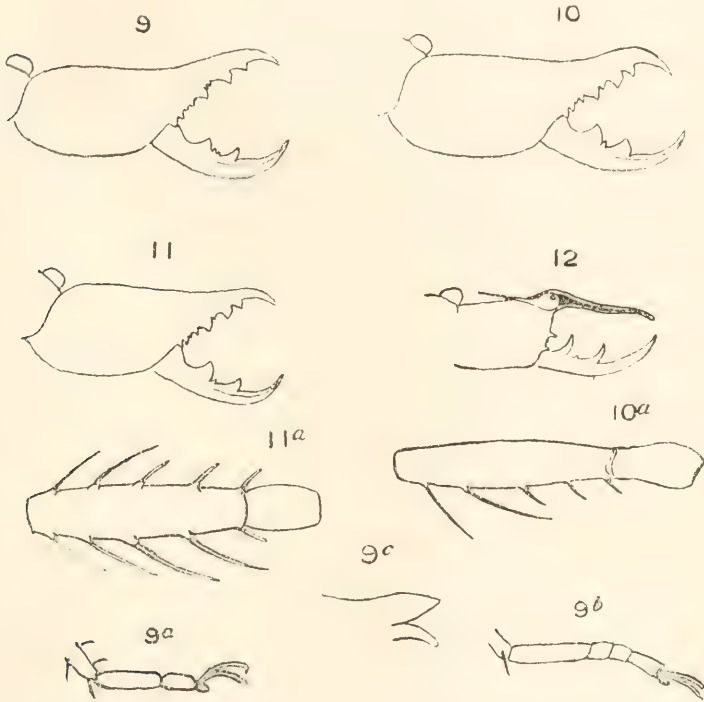
(Figs. 9–9c.)

♀.—*Palps* with the metatarsus slightly but distinctly stouter in the middle than at the ends, depressed from above and below;

* Prof. Kraepelin informs me that *Daesia* and *Biton* are identical.

† The typical arrangement of these spines is shown in figs. 10a and 11a.

tarsus incrassated towards the apex when seen from the side, its length about one-third that of the metatarsus. Under side of femur with long setæ, an anterior row of 4 slightly stouter than the rest; under side of tibia with an anterior row of 2 and a posterior row of 3 stout setæ very distinctly set off from the rest and equalling the



Daesia leipoldti, n. sp. ♀. Fig. 9, right mandible from lateral side. Fig. 9a, tarsus of II. and III. leg. Fig. 9b, tarsus of IV. leg. Fig. 9c, rostrum (the stiff tuft of hairs at the apex not sketched in).

D. kolbei, n. sp. ♀. Fig. 10, right mandible from lateral side. Fig. 10a, metatarsus and tarsus of right palp from posterior (outer) side.

D. pallida, n. sp. ♀. Fig. 11, right mandible from lateral side. Fig. 11a, metatarsus and tarsus of right palp from below.

D. subulata, n. sp. ♂. Fig. 12, left mandible from inner side.

short metatarsal spines in thickness; metatarsus with an outer row of 3 strong short spines (one in the middle of the segment, one at the apex, and one midway between these two) and an inner one of 1 similar apical spine, but there are no distinct series of spiniform setæ similar to those on the tibia, all the setæ being much slenderer than those on the latter. Metatarsus of II. leg with 5 short dorsal

spines, also 1 posterior and 2 anterior spines (including an apical inferior pair); metatarsus of III. leg with 3 short, very stout, dorsal spines, also an anterior row of 2 and a posterior row of 3 slenderer spines (including an apical inferior pair); the tarsi of these legs and the distal segments of the IV. leg with several spines; no apical spines on the tibiae.

Mandibles stout and bristly. Upper jaw with 3 large teeth in the single series and 2 minute teeth between the second and third large ones; the terminal fang strongly curved downwards, but only slightly outwards, at the apex. Lower jaw with 2 strong teeth and a pair of minute ones between them.

Colour.—Ground colour pale yellow. Head-plate with the lateral part broadly infusate, the central and posterior parts occupied by a large, 3-lobed, foliaceous area, which is marmorate at the sides but simply yellow and provided with a fine, brown, longitudinal line along the median part; ocular tubercle deep black, flanked on each side by a marbled yellow area. Mandibles with 3 longitudinal infusate stripes (2 dorsal and 1 lateral) on a reddish yellow background, finely marbled between the stripes; the dorsal stripes expanded distally and united here to form an obliquely transverse distal stripe, the innermost stripe with a yellow distal spot; the lateral stripe obsolete anteriorly. Abdomen pale, the anteriormost terga with a median and a pair of lateral black stripes. Palps blackened, the trochanters and the outer and upper surfaces (except in the distal part) of the femur pale yellow, the upper surface of the tibia and of the distal part of the femur marmorate on each side of the middle line. Legs infuscated, except on the under side, on the posterior side of the femora, and on the upper and posterior sides of the trochanters, where they are pale yellow; in the femora and tibiae the upper surface is partially marmorate.

Measurements.—Total length $17\frac{1}{2}$; length of head-plate 3, width 4; length of mandibles $4\frac{3}{4}$; length of palps $12\frac{1}{3}$, tibia $3\frac{2}{3}$, metatarsus + tarsus $4\frac{1}{4}$; length of III. leg 10; length of IV. leg $17\frac{1}{4}$, tibia $4\frac{1}{4}$, metatarsus $3\frac{1}{4}$.

Locality.—(a) A female (type, No. 3791) from Olijvenbosch Kraal, near the Berg Vlei River, north of the Piquetberg Range, Clanwilliam Div.

(b) A female from Lamberts Bay, Clanwilliam Div. (*R. Pattison*, Nov., 1897), differs from the type in having only 1 small tooth between the 2 large ones in the lower jaws, and there is 1 small tooth in one, but 2 in the other upper jaw between the second and third large teeth.

The type was obtained for us through Mr. C. L. Leipoldt, to whom the Museum is indebted for a large number of new and rare Arachnida from the Division of Clanwilliam.

DAESIA KOLBEI, n. sp.

(Figs. 10, 10a.)

♀. *Colour*.—Head-plate marked as in *leipoldti*, but slightly darker. Mandibles as in *leipoldti*, except that the dark lateral stripe is obsolete; the sides, however, marmorate. Abdomen pale yellowish, the terga broadly but palely infusate at the sides and in the middle. Palps with the metatarsus and tarsus deeply infusate, the tibia pale brownish, yellowish at the ends, the remaining segments pale yellow. Legs pale yellow; I. leg infusate above in the two distal segments; II. and III. legs with the femora and tibiæ partially pale infusate; femur of IV. leg infusate, the upper side marbled on each side of the middle line, the inner side (except at base) and the under side yellow, the tibia (excepting below and at the apex) infusate, marbled above, the metatarsus infusate in the middle on the upper and outer surfaces. Malleoli pale, the leg segments bearing them with a short black line at the base of each malleolus.

Palps with the metatarsus more distinctly fusiform and relatively stouter than in *leipoldti* (fig. 10a); the tarsus incrassated distally, when seen from the side, and relatively stouter than in *leipoldti*. Under side of femur with a very distinct anterior row of 4 stout spiniform setæ, of which the distal one is strongest; the setæ along the posterior edge feeble. Under side of tibia with 2 very distinct rows of long and very stout spiniform setæ, 3 in each row. Under side of metatarsus with an outer row of 3 distal spines and 2 long proximal setæ and an inner row of 1 apical spine and 4 setæ; the spines short and stout, disposed as in *leipoldti*, the setæ long, stout, and spiniform, very distinctly seriate and sharply set off from other setæ on the joint, the 3 distal setæ of the inner row quite as stout as those on the tibia, the basal one of this row slenderer. Spines on the legs as in *leipoldti*.

Dentition.—One small tooth between the 2 large ones in the lower jaw; between the second and third large teeth of the upper jaw there is 1 small tooth in one jaw but 2 in the other, just as in the specimen of *leipoldti* from Lamberts Bay.

Measurements.—Total length $19\frac{1}{2}$; length of head-plate 3, width 4;

length of mandibles $4\frac{3}{4}$; length of palps $11\frac{1}{2}$, tibia $3\frac{1}{2}$, metatarsus + tarsus 4.1; length of III. leg 10; length of IV. leg 16, tibia 4, metatarsus 3.

Locality.—A single ♀ (No. 1181) from Buluwayo, Matabeleland, collected by the Rev. Dr. F. Kolbe, of St. Mary's, Cape Town, to whom the Museum is indebted for two new species of Solifugæ.

DAESIA PALLIDA, n. sp.

(Figs. 11, 11a.)

Colour.—Whole animal very pale yellowish; ocular tubercle deep black; the 3 distal segments of the palps infuscated, except on the under side, which is pale yellowish, the femur marmorate above on each side of the middle line; IV. leg feebly infuscate above at the apex of the femur and at the base of the tibia; jaws of mandibles reddish, black at the tips. Coxa and trochanters with black markings at the insertion of the pallid malleoli.

Palps.—Metatarsus and tarsus shaped and proportioned as in *kolbei*. Under side of femur with an anterior row of 4 and a posterior row of 2 spiniform setæ, all very distinctly set off from the other setæ on the joint, the distal anterior one much larger than the others; under side of tibia with two rows of long setiform spines (3 in each row), which are remarkably stout with the exception of the posterior basal one. Under side of metatarsus (fig. 11a) with 2 rows of 4 short spines and 6 long setiform spines, arranged as in *kolbei*; the basal pair are strong but slenderer than the other setiform spines, which are remarkably strong and stout, especially those of the anterior row. Short spines on the legs as in *leipoldti* and *kolbei*, excepting that there are 4 posterior spines on the metatarsus of III. leg, the two proximal ones close together.

Dentition.—Only 1 small tooth between the second and third large teeth in the upper jaw and 1 between the 2 large teeth in the lower jaw—otherwise as in the preceding species; terminal fang of upper jaw less strongly curved than in the preceding form.

Measurements.—Total length $13\frac{1}{2}$; length of head-plate 3, width $3\frac{1}{2}$; length of mandible $4\frac{1}{3}$; length of palps 12, tibia $3\frac{1}{2}$, metatarsus + tarsus 4.1; length of III. leg $9\frac{3}{4}$; length of IV. leg $17\frac{1}{2}$, tibia $4\frac{1}{4}$, metatarsus 3.

Locality.—A single specimen (♀ or immature? No. 2832) from Eitias in Great Bushmanland, Kenhart Div. (*Max Schlechter*, March, 1898).

This species is characterised by the remarkably strong armature on the under side of the palps.

DAESIA SUBULATA, n. sp.

(Fig. 12.)

♂. *Colour*.—Ground colour pale yellowish. Head-plate with the lateral parts broadly infusate, the lateral border, a spot on each side of the deep black ocular tubercle, and the large, 3-lobed, foliaceous, central area pale yellowish, the latter area faintly marmorate towards the sides and provided with a fine median line. Mandibles very pale yellow, without any infusate markings, but with numerous, short, spiniform setæ. Abdomen with pale purplish tinge, the anterior segments pale yellow, all the terga infuscated at the lateral borders but not along the median line. Palp with the distal part of femur (excepting on the inner side), the tibia, metatarsus and tarsus deeply infusate, the two latter with a broad pale streak on the under side, the tibia with a similar streak in the basal two-thirds below and with its upper surface marbled on each side of the middle line. I. and II. legs pale yellow, the tibiæ with the sides feebly infuscated at the base; III. leg with the femur and tibia (excepting below) and the sides of the metatarsus at the base infuscated, the upper surface of the femur and tibia marmorate; IV. leg with the femur (except at the base below), the tibia (excepting below) and the basal part of the metatarsus (excepting below) infuscated, the femur and tibia marbled above on each side of the middle line.

Palps with the metatarsus and tarsus shaped as in *leipoldti*; metatarsus below with two rows, each composed of 3 short stout spines and 2 proximal setæ; the spines of the outer row arranged as in *leipoldti*, but in the inner (anterior) row the middle spine is nearer to the distal than to the proximal spine; the two setæ completing the rows on each side are slender, not at all spiniform, and much finer than the seriated setæ on the tibia. Under side of tibia with an inner row of 3 spiniform setæ (the proximal one shorter and slenderer than the other two but stouter than the corresponding seta in *leipoldti*) and an outer row of about 5 setæ, of which the distal one is slightly, the proximal one considerably, slenderer than the middle spiniform ones; under side of femur with an inner row of about 4 spiniform setæ.

Short spines on the metatarsi of II. and III. legs as in *leipoldti*.

Mandibles with the upper jaw composed of a sub-quadrate (when

seen from the side) basal portion, produced at its upper anterior angle into a long, slender, toothless, terminal fang. This fang is almost straight and subulate, very slightly sinuous above in the middle and again below at the apex, and is slightly inclined outwards from its base; it forms an angle of about 150° with the upper surface of the mandible; its outer surface is convex but the inner surface is deeply sulcate throughout its length. The anterior almost truncated surface of the basal portion of the jaw is sinuate in the upper part and nearly at right angles to the fang, while in the lower part it is furnished with a double row of teeth, the outer row being composed of 4 teeth, the second tooth being very small. Lower jaw slender, curved strongly upwards towards the apex, provided with 2 long and rather slender sharp teeth with a minute denticle between them.

Flagellum composed of a transparent, pear-shaped, flattened disc, drawn out behind into a straight subulate shaft, which exceeds the disc in length and is directed backwards and slightly upwards. The disc is attached, scale-like, to the inner surface of the mandible at its upper edge just behind the base of the fang in such a manner that the lower half and the upper edge of the vertical disc is free, the edge projecting slightly above the upper surface of the mandible.

Measurements.—Total length $16\frac{1}{3}$; length of head-plate 3, width $3\frac{1}{4}$; length of mandibles 4; length of palps 14, tibia $4\frac{3}{4}$, metatarsus + tarsus $4\frac{3}{4}$; length of III. leg $10\frac{2}{3}$; length of IV. leg $21\frac{1}{2}$, tibia 5, metatarsus $4\frac{1}{2}$.

Locality.—A single ♂ (No. 3802) from Van Wijks Vlei, Carnarvon Div. (*E. G.* and *D. C. Alston*, 1899), captured in a house at night.

GEN. CEROMA, Karsch,

1885, Karsch, Jahrb. Hamburg. Anst., p. 137.

Characters of the South African Species.—Tarsi of II.–IV. legs two-jointed, with very long, strongly diverging, sub-ungual appendages (fig. 13*b*). Tarsus of I. leg with 2 small but distinct claws in both sexes. Short stout spines occur only on the II. and III. legs, viz., 1 at the apex of the tibia and 3 on the upper side of the metatarsus (in *C. inerme* these spines are very weak); long spiniform setæ occur on the legs and palps, those on the under side of the tibia of the latter arranged in two distinct series (*sclateri*, *capense*) or more irregular (*inerme*). Tarsus of palp immovably fused to the metatarsus, the latter (fig. 13*a*) cylindrical or very slightly depressed from

above, not attenuated distally, where it is as thick as in the middle, the under surface without true spines or scopula. Basal enlargement of flagellum (figs. 13 and 14) protected by a row of stiff bristles, turgid on the median side but flat on the lateral side, by which it is immovably fixed to the inner surface of the base of the terminal fang; the basal enlargement produced upwards into the shaft (not forwards as in *Solpuga*). Ocular tubercle with a number of fine bristles, especially in front. Upper lobe of rostrum either evenly pointed at the apex, as in fig. 13c (*sclateri*, *inermis*), or the apex unevenly pointed, the lower side being straight and the upper convex (*capense*, fig. 15b).

CEROMA SCLATERI, n. sp.

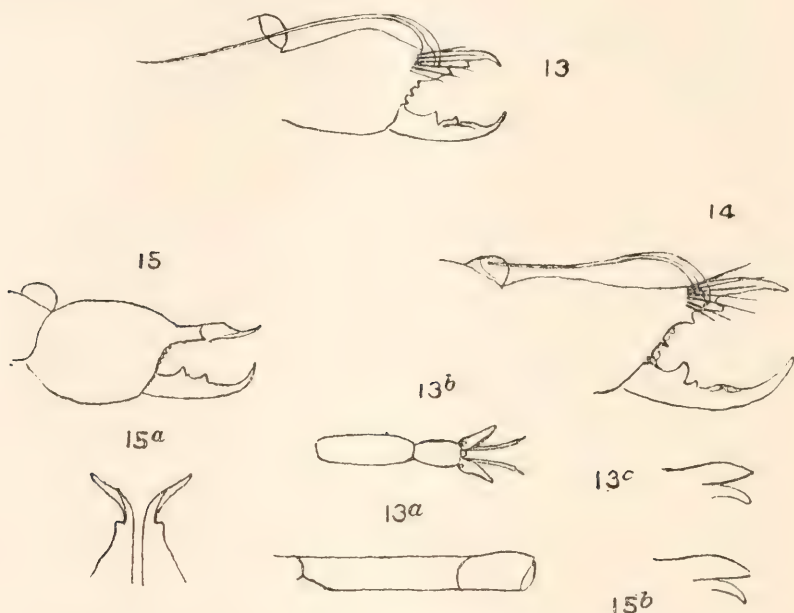
(Figs. 13–13c.)

♂.—*Flagellum* extremely long, reaching, when straightened out, almost to the hind margin of the head-plate. Basal enlargement pear-shaped, somewhat laterally compressed, deeply sulcate on its anterior side, the sulcus bounded laterally by a high thin keel and on the median side by a lower, thicker ridge; the basal enlargement situated at the base of the upper fang on its inner side and protected on the median side by a row of long, stiff, feathery hairs which reach to the apex of the fang. Basal portion of flagellum tapering gradually upwards and then backwards into the slender filiform shaft, which passes along the middle of the upper surface of the mandible and on the lateral side of the eye-tubercle, behind which it curves gradually towards the median line. The anterior sulcus is continued backwards along the upper surface for some distance, while the lateral keel bordering this sulcus may be traced almost to the apex of the flagellum.

Mandibles gibbous above, the upper jaw with the terminal fang rather long, curved downwards at the apex, which is remote from the base of the flagellum. First tooth strong, closely followed by a second equally strong tooth, the basal part of which is prolonged posteriorly in the form of a long low ridge; this is followed by the small outer teeth of the double series; the first tooth of the inner series long and slender (inner series not drawn in fig. 13). Hind tooth of lower jaw large and strong, preceded by a smaller tooth; immediately in front of the latter is a long low keel confluent with the base of the smaller tooth; on the median side of this tooth and keel is a second keel, running along the inner edge of the upper side

of the jaw and directed upwards and inwards, forming a deep sulcus with the outer keel.

Tarsi of the legs with the terminal segment short, slenderer than the first segment, from which it is separated by a strong constriction; the sub-ungual appendages very long and turgid, somewhat attenuated towards the apex and strongly diverging, half as long



Ceroma sclateri, n. sp. ♂. Fig. 13, left mandible from inner side (the flagellum is purposely drawn on the right of the eye-tubercle to show its course). Fig. 13a, metatarsus and tarsus of palp from the side. Fig. 13b, tarsal joints of II. and III. leg. Fig. 13c, rostrum (apical tuft of hairs not sketched in).

C. inermis, n. sp. ♂. Fig. 14, left mandible from inner side (the flagellum is drawn as if on the right side of the eye-tubercle to show its length).

C. capense, n. sp. ♀. Fig. 15, right mandible from lateral side. Fig. 15a, apical part of both mandibles, from above. Fig. 15b, rostrum (apical tuft of hairs not sketched in).

as the basal joint of the claws and provided with a very noticeable, deep-black, basal spot above (fig. 13b). Tarsus and metatarsus of palp stout, straight, not curved below, the former very slightly incrassated above (fig. 13a). Tibiæ of II. and III. legs with one short apical spine, the metatarsi of these legs with 3 short, stout, dorsal spines; no other short spines are present on any of the legs,

but the under side of the 3 posterior pairs are provided with long, curved, spiniform setæ. Tibia of palps with two rows of very long, strong, flexible setæ below, 4-5 in each row; the metatarsus without distinctly seriated setæ. I. leg provided with a pair of small claws, but without sub-ungual appendages.

Ocular tubercle large, strongly projecting anteriorly.

Colour and markings very like those of *C. ornatum*, Karsch. Ground colour pale yellow, that of the mandibles testaceous yellow. Head-plate and the limbs (excepting below and at the base) partly marbled with dark brown, partly infusate. Mandibles with 1 lateral and 2 dorsal, narrow, longitudinal, infusate stripes, the parts between these stripes testaceous yellow and only partially marmorate. Head-plate infusate in the lateral parts, except along the border, which is yellow; the central region marmorate; a median stripe extending from the hind margin to the ocular tubercle yellow but not marbled, divided longitudinally by a fine infusate line and expanded in the middle and again anteriorly, where it extends round the hind edges of the tubercle in the form of a short transverse arm, which ends on each side in an enlarged, somewhat four-sided, yellow spot. Ocular tubercle black. Terga of abdomen pale yellow, with a large black patch on each side and a fine, median, black stripe, the lateral patches longitudinal in the anterior but transverse in the posterior segments; the soft skin on the sides of the abdomen infusate, thickly covered with minute yellow dots and whitish yellow hairs. Upper surface of the femora of palps and legs, and of the tibiae of the palps and anterior legs yellowish, marmorate, provided with a longitudinal infusate stripe along the middle. Malleoli black-edged. Whole animal covered with whitish yellow hairs, which are not forked at the apex.

Measurements.—Total length 17; length of head-plate 3, width $3\frac{1}{3}$; width of eye-tubercle 1.1; length of mandibles $3\frac{3}{4}$, width $1\frac{2}{3}$; length of flagellum (straightened) $5\frac{1}{4}$; length of palp 12, tibia $3\frac{2}{3}$, metatarsus + tarsus $4\frac{1}{2}$; length of III. leg $11\frac{1}{2}$; length of IV. leg 19, tibia 5, metatarsus $3\frac{1}{2}$.

Locality.—1 ♂ (type, No. 2840) from Houwhoek, Caledon Div., captured by Mr. W. L. Selater.

A young specimen, 10 mm. long and evidently belonging to this species, was taken by me at Ashton, Robertson Div. It has the sides of the abdomen pale yellow and the median dorsal stripe is obsolete. The single row of teeth in the upper jaw consists of 2 large, curved, distal teeth, followed by a minute and another large tooth, while the lower jaw has 2 large curved teeth and a small

tooth between these; the upper fangs are turned slightly but distinctly outwards towards the apex.

This species closely resembles *C. ornatum*, Karsch, from Massai-land in its colouration.

CEROMA INERME, n. sp.

(Fig. 14.)

♂.—Legs without distinct strong spines, excepting perhaps the apical spine of the tibiæ of the II. and III. legs, those on the upper side of the metatarsi of the II. and III. pair in *C. sclateri* replaced in this species by several (more than 3) strong bristles. The long stout bristles on the under side of the palps not distinctly arranged in two definite series on the tibia (resembling *C. ornatum*, Karsch, in this respect). Metatarsus and tarsus of palps stout and straight, not concave below, becoming scarcely perceptibly thicker distally. I. leg as in *sclateri*. Sub-ungual appendages of tarsi shrivelled up. Ocular tubercle relatively smaller and less prominent anteriorly than in *sclateri*.

Colour.—Mandibles yellow or testaceous, with the 3 longitudinal stripes of the last species faintly marked in one specimen. Head-plate black-ferruginous, paler along the median line and at the posterior and lateral borders; the eye-tubercle black. Legs yellowish, the femora and tibiæ of the III. and IV. pairs, and the palps from the distal portion of the femur to the apex, dark ferruginous, all these segments with a yellow stripe on the under surface; the II. pair of legs darkened at the apex of the femora and at the base of the tibiæ. Malleoli not black-edged. Abdomen wholly ferruginous black, the hairs on the terga very short, yellowish, those on the sides long, white or whitish, silky; the ventral surface densely covered with short, stiff, erect, whitish hairs, all of which have a curious, minutely Y-shaped fork at the apex. Mandibles, head-plate, and limbs thickly covered with very short whitish hairs, with some longer hairs and setæ interspersed amongst them.

Mandibles.—Terminal fang of upper jaw long and slender, gradually curving downwards towards the apex, not sigmoid; the 2 distal teeth strong, remote from the apex, the first just anterior to the front edge of the flagellum, the second normal, not produced backwards at the base in the form of a long keel, but directly followed by the outer series of the double row; these sharp and not very small, the first of the inner row spiniform. Lower jaw with

the posterior tooth large and strong, preceded by a very small tooth (in one jaw there is a minute tooth between these in addition); anterior to the small tooth are a pair of thin keels, one on the inner and one on the outer edge of the upper surface; the inner keel is sub-dentiform and directed upwards and inwards, the outer keel forms a long low ridge directed upwards and in a line with the teeth of the jaw. These two keels are very characteristic.

Flagellum somewhat resembling that of *sclateri* but much shorter, the apical part quite straight and terminating on each side of the ocular tubercle almost in a line with its hind margin. At the anterior bend the flagellum is strongly compressed laterally, but at the basal end it is scarcely enlarged, although provided on the median side with a small inflation (apparently corresponding to that on the outer side of the basal enlargement of *Solpuga*); the basal end protected by a row of stiff feathery bristles, which do not, however, reach the apex of the jaw. The anterior half of the flagellum is minutely sulcate above and in front, the outer keel bounding the sulcus being a continuation of the very high keel at the anterior bend, as in *sclateri*; in its posterior half, however, the flagellum is cylindrical without trace of the keel.

Measurements.—Total length $20\frac{1}{2}$; length of head-plate $3\frac{1}{2}$, width 4; length of mandible 5, width 2; length of flagellum $3\frac{1}{2}$; length of palp 15, tibia $4\frac{1}{2}$, metatarsus + tarsus $4\frac{1}{2}$; length of III. leg $16\frac{1}{2}$; length of IV. leg $24\frac{1}{2}$, tibia 6, metatarsus $4\frac{1}{2}$.

Locality.—Two males (dry, No. 1055) labelled "Walfish Bay," Damaraland (Mr. Cleverley).

CEROMA CAPENSE, n. sp.

(Figs. 15–15b.)

♀. *Colouration*.—Very similar in the markings to *sclateri*, but much less deeply infusate. Mandibles pale yellow, with only one longitudinal infusate stripe (corresponding to the middle one of the three in *sclateri*), not marbled. Head-plate similar to that of *sclateri*, differing only in having the marmorate markings much less distinct, the whole central area thus appearing plain yellow to the unaided eye. Terga and sides of abdomen uniformly pale infusate, the sides not darker than the terga; the sides are paler and the terga darker than the corresponding surfaces in *sclateri*, and the three infusate dorsal stripes are quite absent. Legs marked as in *sclateri*, but the infuscation is a little paler, and the legs are pale yellow distally. Malleoli not black-edged.

Palps with the metatarsus and tarsus stout, straight, and equally thick throughout. Armature of the legs and palps and the shape and colouration of the sub-ungual appendages as in *sclateri*. I. leg as in *sclateri*.

Mandibles very bristly, with a dense cluster of reddish bristles on the inner side towards the apex. Terminal fang of upper jaw long and slender, very curiously shaped and divided into two portions: the basal portion, commencing on a level with the first tooth of the inner series and forming about two-fifths of the length of the fang, is hairless, yellowish, slender, almost cylindrical and sharply marked off from the rest of the jaw; it is directed forwards; the distal portion of the fang is a continuation of the median half of the basal portion, the lateral half of the latter terminating abruptly, as if the fang had been transversely cut half-way through its thickness from the lateral side and then the lateral portion of the distal part sliced off by a longitudinal vertical cut (fig. 15a). The distal portion of the fang is dark red and is bent sharply outwards from the base, so strongly that it forms a right angle with the corresponding portion of the other jaw; it is further twisted on its axis so that what is outer surface proximally becomes upper surface distally, while in the region of the twist this surface is strongly concave; the upper margin is, moreover, strongly compressed and forms a sharp-edged keel, which terminates abruptly in an angle at the twist. Dentition of the upper jaw composed of a posterior double series of 3 outer and 3 inner, small, separate teeth, the single series in front of these represented by a low black crenular keel under the basal portion of the fang, but without any separate teeth; the distal portion of the fang without teeth. Lower jaw strongly curved upwards and outwards at the apex and provided with 2 large teeth and 1 small one between them; in one jaw there is another very minute denticle in front of the small tooth; the terminal fang is simple.

Measurements.—Total length $14\frac{1}{2}$; length of head-plate 3, width $3\frac{1}{2}$; length of mandible $3\frac{3}{4}$, width $2\frac{3}{8}$; length of palp $11\frac{1}{2}$, tibia $3\frac{1}{2}$, metatarsus + tarsus 4; length of III. leg $9\frac{2}{3}$; length of IV. leg 16, tibia $4\frac{1}{2}$, metatarsus 3.

Locality.—One ♀ (No. 2843) from Mr. Hertzog's farm "Bergvliet," Constantia area, Cape Peninsula, captured by myself in October, 1896.

GEN. SOLPUGA, Licht.,

1796, Lichtenstein, Cat. rerum nat., iii., p. 216.

Characters.—Tarsus of II. and III. leg four-jointed, of IV. leg seven-jointed, the sub-ungual appendages small and not strongly divaricating. Tarsus of I. leg without claws. Metatarsus of palps appearing thick in the proximal half but attenuated in the distal half, especially when viewed from the side (Fig. 19), the tarsus again thickened and immovably fused with the metatarsus; under side of the latter with a large number of irregularly arranged bristles, made up of short truncated and long pointed ones (in the *lineata* group these bristles, especially the longer ones, are minutely bifid at the apex). Basal enlargement of flagellum flat on the inner side, which is furnished with a narrow posterior border separated by a curved groove from the rest of the surface (Figs. 16, 17, &c.), the outer face turgid in the upper part but immovably fixed in the lower part to the inner upper edge of the mandible at the base of the terminal fang; the basal enlargement produced anteriorly into the procurent portion of the shaft, which is also firmly attached to the upper surface of the terminal fang. Ocular tubercle with more than two anterior setæ. Upper lobe of rostrum evenly pointed, never deflexed at the apex.

Young.—Five very young specimens (?) of *S. vineta*, Koch, from Signal Hill, Cape Town, measuring between 8 and 9 mm. in length, and provided with 5 pairs of malleoli, had the tarsus of the II. and III. legs one-jointed, and that of the IV. leg two-jointed. (In the next smallest specimens, 15 mm. long, these tarsi were jointed as in the adult.) Besides these the Museum possesses several other specimens from various parts of the Colony, most, if not all, of which are perhaps the young of *Solpuga*, although the species cannot be determined. In all of these the tarsi are segmented as in the younger specimens of *S. vineta*. In the smallest example, measuring $8\frac{1}{2}$ mm., there are only 3 pairs of malleoli, but in all the others, the largest of which measures $13\frac{1}{2}$ mm., there are 5 pairs. The metatarsus of the palp, moreover, resembles that of *Ceroma* in not being attenuated distally, although this attenuation was observed in all immature specimens of *Solpuga* which showed the normal number of tarsal segments. The ocular bristles are also much fewer in number, the anterior side of the tubercle generally possessing a large anterior pair, a little behind which a second much smaller pair occurs.

Nearly all the species known to me may be arranged in three

groups, to which a fourth is provisionally added for the reception of a single species of doubtful affinity. These groups appear to be quite natural. The first two differ only in characters confined to the one or the other sex, and are closely related, but the third group appears to stand somewhat apart from the other two.

Synopsis of the identified Species of SOLPUGA in the Museum.

ADULT MALES.

GROUP I.—Upper jaw of mandibles without long toothless spaces, the distal or single row composed of 4–5 teeth in an uninterrupted series.

a. Flagellum distinctly and finely serrated distally along the upper edge.

*a*¹. Terminal fang of upper jaw weak, with strong internal tooth. Bushmanland *schlechteri*, n. sp. (p. 411)

*b*¹. Terminal fang strong and long, with minute internal tooth. Matabeleland *serraticornis*, n. sp. (p. 409)

b. Flagellum not serrated along upper edge.

*a*². Flagellum strongly sinuate above near the apex, reaching backwards beyond the middle of the mandible.

*a*³. Flagellum with a strong tooth near the apex. C. Col. (Western Divs.) *lethalis*, Koch. (p. 405)

*b*³. Flagellum not toothed. C. Col. (Central and Eastern Divs.) *venator*, Poc. (p. 407)

*b*². Flagellum not strongly sinuate at the apex or else very short.

*a*⁴. Basal enlargement of flagellum very long and low, the upper edge almost straight (slightly concave) for a long distance. Rhodesia (also Delagoa B., Pocock) *monteiroi*, Poc.

*b*⁴. Basal enlargement high, rounded or keeled above.

*a*⁵. Flagellum with a short strong tooth near apex. Transvaal *venosa*, n. sp. (p. 412)

*b*⁵. Flagellum not toothed, cuneiform, much broader than the fang below the anterior bend. Rhodesia .. *cuneicornis*, n. sp. (p. 413)

*c*⁵. Flagellum not toothed, broadly subulate, narrower than the fang below the anterior bend. Mashonaland *sericea*, Poc.

*d*⁵. Flagellum extremely short, with a slender inner process and a lobe-like outer process near the apex. Clanwilliam Div. *cervina*, n. sp. (p. 415)

*e*⁵. Flagellum rod-like, with a long slender process near the apex. Cape Div. *fusca*, Koch. (p. 417)

GROUP II.—Upper jaw with long toothless space in the single series.

*a*⁶. Flagellum remote from the apex of fang.

*a*⁷. Recurrent portion of flagellum serrated along three edges. Cape Div.
vincta, Koch. (p. 420)

*b*⁷. Recurrent portion serrated along one edge only. Namaqualand Div.
spectralis, n. sp. (p. 424)

*c*⁷. Recurrent portion with slender keel but not serrated .. ' ..
villosa, n. sp. (p. 422)

*b*⁶. Flagellum close to the apex of fang, filiform, minutely cultrate at the apex.

*a*⁸. Flagellum occupying the whole upper width of the narrow fang at the anterior bend. P. Elizabeth *lateralis*, Koch. (p. 425)

*b*⁸. Flagellum occupying only the inner half of the wide upper surface of the fang at the bend *cultrata*, n. sp. (p. 427)

GROUP III.—Upper jaw with an uninterrupted distal or single series, composed of 7–10 teeth. Namaqualand and Carnarvon Divs. *lineata*, Koch. (p. 428)

FEMALES AND NEARLY MATURE YOUNG.

GROUPS I. and II.—Upper jaw of mandibles with 4–5 teeth in the single or distal series, without toothless intervals.

a. Hairs on the posterior tergal plates of abdomen more or less yellowish and sub-similar in colour to those on the sides of the abdomen.

*a*¹. Head-plate marmorate *cervina*, n. sp. (p. 415)

*b*¹. Head-plate not marmorate.

*a*². Dorsal and ventral surfaces of abdomen similarly coloured.

*a*³. Upper jaw with 2 small teeth between the second and third large tooth *lethalis*, Koch. (p. 405)

*b*³. Upper jaw with only 1 small tooth between the second and third large tooth *venator*, Poc. (p. 407)

*b*². Dorsal surface of abdomen black, ventral surface much paler.
serraticornis, n. sp. (p. 409)

b. Hairs on the posterior tergal plates dark-brown to black, those on the sides of the abdomen white to yellow.

*a*⁴. Lower jaw with 2–3 small teeth between the 2 large ones.
fusca, Koch. (p. 417)

*b*⁴. Lower jaw with only 1 small tooth between the 2 large ones. (Sternal plates of the I. abdominal segment produced at the posterior median angles in the adult ♀.) (GROUP II.)

*a*⁵. Hind-legs without a mane.

*a*⁶. Tergal plates of abdomen entirely black-ferruginous, the sides of abdomen with yellowish-white hairs .. *lateralis*, Koch. (p. 425)

b⁶. Anterior tergal plates ferruginous-brown in the middle and blackened laterally, the posterior ones entirely ferruginous-black, the hairs on the sides of abdomen yellowish white, those bordering the tergal plates bright yellow *vineta*, Koch. (p. 420)

b⁵. Hind legs with a distinct mane on upper side . . *villosa*, n. sp. (p. 422)

GROUP III.—Upper jaw of mandibles with the distal series composed of 7–10 teeth.

a⁷. Head-plate with 4, mandibles each with 2 dark stripes above.

lineata, Koch. (p. 428)

b⁷. Head-plate uniformly yellow *brevipalpus*, n. sp. (p. 431)

GROUP IV.—Upper jaw with the anterior tooth far removed from the second tooth, as well as remote from the apex of the jaw

nigro-braccata, n. sp. (p. 431)

I.—The LETHALIS Group.

Dentition of upper jaw subsimilar in the two sexes, the distal or single series composed of 4–5 teeth, which are not separated into groups by one or more long toothless intervals (figs. 16–22a).

In the first abdominal sternite the posterior median angles of the halves are rectangular or rounded, but not produced in the adult female. In the male the metatarsus of the palp is distinctly scopulate below for a portion of its length; the upper margin of the basal enlargement of flagellum is obtuse and rounded, or elevated in the posterior part to form an angular ridge (but rarely forming a high thin keel); the terminal fang of the upper jaw is not elevated along the inner edge of the upper side to form a groove for the reception of the flagellum, although often slightly dilated inwards. Palps exceeding, rarely equalling, the III. leg in length. Posterior legs with numerous shorter and a small number of very long hairs, which never form a mane (in *sericea*, Poc., however, the long hairs are very numerous).

Mostly large or very large species of a yellow colour, the upper surface often blackened, the abdominal terga mostly uniformly coloured. The large forms appear to be nocturnal in their habits, but the small *fusca*, Koch, and *sericea*, Poc., which have white silvery hairs on the sides of the abdomen, are diurnal.

The species which belong here are:—

(a) Species with the hairs on the abdomen uniformly coloured (probably all or nearly all nocturnal): *lethalis*, Koch, *venator*, Poc., *schlechteri*, n. sp., *serraticornis*, n. sp., *monteiroi*, Poc., *venosa*, n. sp.,

cuneicornis, n. sp., *cervina*, n. sp.; also the following, which are unknown to me: *ferox*, Poc., *darlingi*, Poc., &c.

(b) Diurnal species with the hairs on the sides of the abdomen white, contrasting strongly (at least in the males) with the dark hairs on the posterior dorsal plates: *sericea*, Poc. (with the upper fang carinate above in the distal half), and *fusca*, Koch.

SOLFUGA LETHALIS, C. L. Koch.*

C. L. Koch, Arch. für Naturg., viii., Bd. i., p. 352, 1842; Die Arachn., xv., p. 70, fig. 1465, ♂ & ♀, 1848.

Flagellum.—Basal enlargement longer than high, semicircular in outline, the superior inner edge rather sharply prominent. Procurrent part of shaft very short, much shorter than the basal enlargement; the anterior face of the bend situated on a level with (*i.e.*, directly over), or only very slightly anterior to, the apex of the first tooth of upper jaw (all specimens from Namaqualand), or much farther forward, about midway between the first tooth and the apex of the jaw (specimens from Clanwilliam and Worcester), while in the specimen from the Paarl the bend is almost directly over the first tooth in one jaw but much more anterior to this tooth in the other jaw. Recurrent portion of shaft very long, reaching, when depressed, to hind margin of eyes or even further back a little beyond the tubercle (the distance of the apex of the depressed flagellum from the hind edge of the eye varying from 0–1¼ mm.); shaft straight or nearly so for the greater part of its length, running nearly parallel to the upper surface of the mandible or more commonly ascending (the distance of the eyes from the nearest part of the flagellum thus varying in spirit specimens from ½ to 1½ times the width of the eye-

* If we exclude Great Bushmanland in the north, I find that all large yellow males from the western Divisions of the Cape Colony have the flagellum toothed near the apex, and all large yellow females from these parts are provided with two small teeth between the second and third large ones in the upper jaw. I am informed by Professor Kraepelin that this western species is identical with *S. lethalis*, Koch. On the other hand, all large yellow males from the Divisions to the east of those inhabited by *lethalis* have an untoothed flagellum, and the large yellow females from these Divisions have only one small tooth in the upper jaw (except in an abnormal case, where there were three small teeth in one of the jaws). This eastern form is *S. venator*, Poc.

As *S. lethalis* and *venator* are the only species of which I have been able to examine a fair number of specimens of both sexes from a number of different localities, I have taken the opportunity to point out the extent of the variations observable in several of the organs, especially as regards length. Information on this point should, I think, be of some service to the systematist.

tubercle); the space between the basal enlargement and the recurrent shaft not exceeding the width of the latter. The shaft is strongly sinuate above near the apex, the length of the sinus being about equal to the width of the eye-tubercle; the posterior end of the sinuated portion is provided at the lower (posterior) outer edge with a sharp tooth, beyond which the shaft is continued for a short distance to terminate in a sharp point; the tooth is situated over or slightly behind the eyes when the flagellum is depressed, and is never absent. The shaft is also cylindrical throughout and quite smooth, except on the anterior half of the sinuated portion, which is provided with an oblique and very minutely granular band, commencing anteriorly on the upper surface and ending behind on the outer side.

Upper jaw of mandibles in ♂.—Terminal fang short and weak, curving downwards and outwards at the apex but without sigmoid flexure; the fang flattened at the base above and slightly dilated on the inner side, the dilation often minutely and angularly prominent or almost toothlike anteriorly. First and second tooth large, straight, followed by 2 small teeth, the anterior of which may be very minute or even absent from one or both jaws, the last tooth of the single series large, quadrate, emarginate at apex. *Lower jaw* with 2 large curved teeth and a much smaller tooth between them just in front of the hind one.

Upper jaw in ♀ and young with 3 large strong teeth in the single series and a pair of small ones between the second and third, the anterior of these small teeth very minute, although apparently never absent. *Lower jaw* with 2 large teeth and a small one between them.

Colour.—Entirely pale yellow to reddish yellow, the skin of the abdomen generally darker greyish yellow or grey (often very dark in badly preserved spirit specimens). The long hairs and the bristles on the legs and head-plate, and especially those on the mandibles, reddish or reddish yellow; the hairs on the abdomen yellower and generally of a beautiful golden colour, sometimes with a reddish tinge. Terga not differently coloured from the sides of the abdomen. Malleoli pale. Head-plate infuscated just behind the pale anterior border.

Legs and palps with a thick under-coat of very short hairs, which are much more numerous than the longer ones.

Dimensions.—♂: Tibia of palp a little shorter than (18·7 : 19·1), equal to, or a little longer than (17·4 : 16·9) the metatarsus + tarsus and always exceeding the tibia of IV. leg (by $1\frac{1}{4}$ – $2\frac{1}{2}$ mm.). ♀: Width of head-plate equal to or considerably less than the tibia of

palp, and slightly less than, equal to, or slightly greater than the tibia of IV. leg. Tibia of palp shorter than its metatarsus + tarsus, but equal to or longer than the tibia of IV. leg.

*Measurements** of a large ♂ and ♀ (No. 2826, from Elizabethfontein, Clanw. Div.).—Total length ♂ 50, ♀ 60; length of head-plate ♂ $9\frac{1}{4}$, ♀ 9, width ♂ 11, ♀ 12; length of mandible ♂ $14\frac{1}{2}$, ♀ $17\frac{1}{4}$, width ♂ 5, ♀ $6\frac{1}{4}$; length of flagellum 14; length of palp ♂ 58, ♀ 45, tibia ♂ $18\frac{3}{4}$, ♀ 14, metatarsus + tarsus ♂ 19, ♀ 15; length of III. leg ♂ 50, ♀ 39; length of IV. leg ♂ 79, ♀ 61.

Localities.—The Museum possesses 6 ad. ♂, 7 ad. ♀, and 4 young from the western Divisions of the Colony, extending from the Orange River southwards as far as Malmesbury, Paarl, and Worcester, viz.:—

(a) Namaqualand Div.—1 ad. ♂ from Kraaiwater, near Naroep, Great Bushmanland (*M. Schlechter*), 1 ad. ♂ from Steinkopf (*W. H. Turle*), 1 ad. ♂ and 1 ad. ♀ from Ookiep (*Dr. Howard*); also 2 ad. ♀ from Namaqualand (*M. Schlechter* and *W. C. Scully*).

(b) Clanwilliam Div.—1 ad. ♂ and 1 ad. ♀ from Elizabethfontein (1,000 feet, *Miss M. Bergh*), 1 ad. ♀ from Wupperthal (*C. L. Leipoldt*), and 1 juv. from Clanwilliam village (*C. L. Leipoldt*).

(c) Malmesbury Div.—1 ♀ (dried) from the village of Malmesbury (*Dr. R. H. Rozenzweig*).

(d) Paarl Div.—1 ad. ♂ from the Paarl village (*Rev. J. F. Curlewis*).

(e) Worcester Div.—1 ad. ♂ from the village of Worcester (*J. Lycett*), 1 ad. ♀ and 1 juv. from Rabiesberg, near Nuy River (*F. Purcell*), and 2 juv. from Touws River (*Dr. W. P. Le Fleuvre*).

Besides these there is an ad. ♂ and an ad. ♀ without locality (*Rev. G. H. R. Fisk*).

SOLPUGA VENATOR, Poc.

Pocock, Ann. Mag. N. H. (6), xx., p. 258, fig. 7, ♂.

Flagellum very variable in length, reaching to above the centre of the eyes in the northern variety but terminating a little distance

* Throughout this paper the total length includes the mandibles; the length of the legs is taken along the upper side from the apex of the tarsus to the base of the first free segment, that of the palps to the posterior upper edge of the first free segment; the length of the head-plate is measured along the median line from the anterior surface of the ocular tubercle, and that of the mandible is taken laterally from the apex to the hinge; that of the flagellum from the apex to the anterior bend.

before the eye-tubercle in more southern varieties.* Basal enlargement like that of *lethalis*, except that the upper edge is less sharply or not at all angular. Recurrent part cylindrical, except quite anteriorly at the bend, with a similar sinus at apex, but without trace of apical tooth; anterior surface of bend on a level with the apex of first tooth of jaw, or farther forward midway between this tooth and the apex of the jaw.

Dentition and terminal fang as in *lethalis*, except that there is only one small tooth between the second and third large ones in the upper jaw in both sexes (in a ♀ from Victoria W. one jaw has 3 such small teeth and the other only one, but this is doubtless an abnormality).

Colour as in *lethalis*.

Measurements of large ♂ and ♀ (from Naroep).—Total length ♂ 57, ♀ 75; length of head-plate ♂ 11, ♀ 11, width ♂ 12, ♀ $15\frac{1}{4}$; length of mandibles ♂ 16, ♀ 20, width ♂ $5\frac{3}{4}$, ♀ $7\frac{2}{3}$; length of flagellum 13; length of palp ♂ 68, ♀ 54, tibia ♂ $22\frac{1}{2}$, ♀ 16, metatarsus + tarsus ♂ $20\frac{1}{3}$, ♀ $17\frac{1}{2}$; length of III. leg ♂ 57, ♀ 46; length of IV. leg ♂ 82, ♀ 71, tibia ♂ $18\frac{1}{2}$, ♀ 15, metatarsus ♂ $16\frac{2}{3}$, ♀ $13\frac{1}{2}$.

Localities (in Cape Colony).—(a) Sutherland Div.: 1 ad. ♂ (dried) from the Little Roggeveld (*J. Lycett*).

(b) Pr. Albert Div.: 1 ad. ♀ from Laingsburg (*D. Carr*).

(c) Beaufort W. Div.: 1 ad. ♂, dried (*L. Péringuey*).

(d) Middelburg Div.: 1 ad. ♀ from Middelburg (*Dr. C. S. Piers*).

(e) Victoria West Div.: 1 ad. ♀ from Wagenaars Kraal (*Dr. C. S. Piers*).

(f) Carnarvon Div.: 2 ad. ♂ and 4 juv. from Van Wyks Vlei (*E. G. and D. C. Alston*).

(g) Kenhart Div.: 2 ad. ♀ from Pofadder, in Great Bushmanland (*Max Schlechter*).

(h) Namaqualand Div.: 1 ad. ♂ and 2 ad. ♀ from Naroep and

* The apex of the flagellum, when depressed, may be distant from the ocular tubercle $1\frac{1}{3}$ times the width of the latter (♂ from Sutherland Div.), once this width (♂ from Beaufort W.), $\frac{3}{4}$, $\frac{2}{3}$, or $\frac{1}{3}-\frac{1}{4}$ this width (a ♂ from Van Wyks Vlei); in another ♂ from Van Wyks Vlei one flagellum is $\frac{1}{4}$ this width from the tubercle, while the other reaches the eye itself; in one ♂ from Bushmanland the apex just touches the anterior side of the tubercle, while in the other it reaches to the centre of the eye. Different as two extreme cases may appear, it is nevertheless impossible to specifically separate these specimens, which do not otherwise differ except in slight and unimportant variations in the relative lengths of the segments of the limbs.

1 ad. ♂ from Kraaiwater, near Naroep, Great Bushmanland (*Max Schlechter*).

Also 2 ad. ♂ without locality (*Sir Bartle Frere, Rev. G. H. R. Fisk*), and 1 juv. labelled "Nisbet Bath" (Warmbad, in Great Namaqualand).

The distribution of this species is interesting. It evidently occupies the whole of those dry regions of the Colony (without winter rains) which lie to the east of the coast strip with winter rains occupied by *lethalis*. The only locality where both species have been found to occur is Great Bushmanland (without winter rains), where, however, *lethalis* appears to be very rare. In fact at Naroep the males of no less than three large yellow species have been found living side by side by Mr. M. Schlechter, viz., *lethalis*, *venator*, and *schlechteri*.

SOLPUGA SERRATICORNIS, n. sp.

(Figs. 16, 16a.)

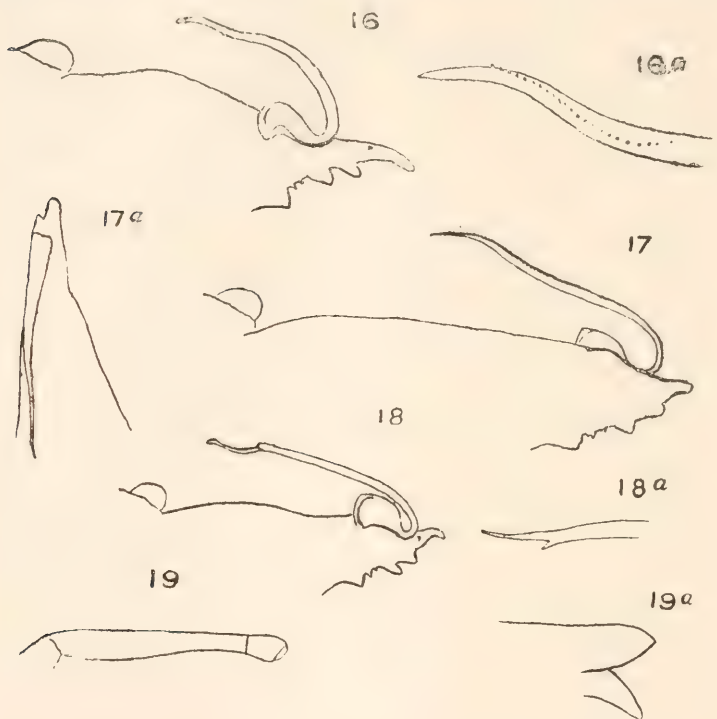
♂ (*Type*).—*Flagellum* reaching back a little beyond the middle of the mandible, ending far in front of the ocular tubercle. Basal enlargement high, the anterior upper edge less curved than the very convex posterior edge but not forming an angle with the latter. Procurrent portion of flagellum short. Recurrent portion forming a bold curve high above the basal enlargement, the curve occupying three-fourths of the length and having the concavity facing downwards; the distal fourth of the recurrent portion forms a smaller curve also opening downwards, and where the two curvatures join a sinus opening upwards is formed. The recurrent portion is stout anteriorly, terete, not flattened, tapering towards the apex, and provided with a minutely but sharply denticulate crest in the posterior third or fourth of its length. This crest runs along the middle of the outer surface anteriorly, but along the upper outer edge more posteriorly, ending a little distance from the apex, which is sharply pointed (fig. 16a).

Upper jaw of mandibles with 3 large teeth in the single row, the first two being straight, not hooked, while between the second and third are 2 small teeth (fig. 16). Terminal fang strong, long and curved downwards but not outwards, more convex than flattened above (except just under the bend of the flagellum), scarcely dilated on the inner side, but provided here with a minute tooth, which is, however, hardly large enough for the lower jaw to close against it.

Lower jaw with 2 large hooked teeth and a smaller tooth between these just anterior to the hinder one.

Dentition of ♀ as in *lethalis*, the upper jaw with 2 small teeth between the second and third large ones.

Colour.—Head-plate and mandibles reddish yellow, the head-plate infuscated just behind the pale anterior border; the legs also reddish yellow in the ♀, but pale yellow in the ♂. Under side of



Solpuga serraticornis, n. sp. ♂. Fig. 16, left mandible from inner side. Fig. 16a, apex of right flagellum from the lateral side more highly magnified.

S. schlechteri, n. sp. ♂. Fig. 17, right mandible from lateral side. Fig. 17a, distal part of same mandible from above.

S. venosa, n. sp. ♂. Fig. 18, left mandible from inner side. Fig. 18a, apex of left flagellum from above.

S. lethalis, Koch. Fig. 19, metatarsus and tarsus of palp from the side. Fig. 19a, rostrum (apical tuft of hairs not sketched in).

body pale yellow, greyish in one ♀ specimen. The tergal plates of the abdomen and the upper portion of the soft skin on each side of these plates black. The hairs and bristles on the legs, head-plate,

and especially on the mandibles reddish or reddish yellow, those on the back and sides of abdomen uniformly reddish yellow. Malleoli pale.

Locality.—One male (type, No. 1180) from Buluwayo (*Rev. Dr. F. Kolbe*). One ad. ♀ from Umgusi, near Buluwayo (*R. Pratt*), and another from Southern Rhodesia (*R. Pillans*).

Measurements of the Buluwayo Specimens.—Total length ♂ 40, ♀ (abdomen not distended) 58 (in Mr. Pillan's specimen 73, the abdomen being much distended); length of head-plate ♂ 8, ♀ 10, width ♂ 10, ♀ 15; length of mandible ♂ 12, ♀ 20, width ♂ $4\frac{1}{2}$, ♀ 7; length of flagellum $5\frac{3}{4}$; length of palp ♂ 41, ♀ 41, tibia ♂ 14, ♀ 13, metatarsus + tarsus ♂ $13\frac{1}{2}$, ♀ $13\frac{1}{2}$; length of III. leg ♂ 38, ♀ $35\frac{1}{2}$; length of IV. leg ♂ 56, ♀ 56, tibia ♂ 12, ♀ $11\frac{1}{2}$, metatarsus ♂ 11, ♀ 10.

SOLPUGA SCHLECHTERI, n. sp.

(Figs. 17, 17a.)

♂.—*Flagellum* moderately long, reaching back as far as the middle of the mandible. Basal enlargement high, its posterior margin very convex, its upper margin much straighter and strongly sloping forwards, forming a blunt angle with the posterior margin. Procurrent portion of flagellum short, the anterior bend high, situated just over the first tooth of the upper jaw. Recurrent portion sinuate above behind the middle and again below near the apex, the whole anterior portion (that lying above and before the basal enlargement) much flattened; the middle portion cylindrical; the distal third of the recurrent portion strongly compressed laterally in its basal half, but finely subulate in the apical half. This distal third is sinuated throughout its length below, while its upper edge is minutely serrated nearly to the apex, the serration commencing anteriorly along the outer side of the upper surface but crossing over to the inner side of this surface posteriorly. Seen from above (fig. 17a) the flagellum appears broadest anteriorly and becomes gradually narrower up to the commencement of the distal third, but seen from the side it appears thickest in the middle (fig. 17). The anterior portion lies some little distance above the basal enlargement.

Upper jaw with 3 large teeth in the single row; between the second and third large tooth are 2 small teeth, of which the anterior one is very minute; the 2 anterior large teeth confluent at their base and stumpy. Terminal fang very short, curved, its upper

surface flattened but not grooved, dilated on the inner side, the dilation ending anteriorly in a strong tooth against which the lower jaw closes. *Lower jaw* with 2 large strong teeth and a small tooth between them, just in front of the hind one; this hind tooth recurved at the apex, and provided in one of the jaws with a minute additional tooth on its anterior surface; the large anterior tooth straight, scarcely recurved at the apex.

Colour as in *lethalis*, entirely pale yellow, the long hairs and bristles on the legs, head-plate and mandibles, tinged with reddish, those on the abdomen pale yellow. Head-plate infusate just behind the pale anterior border. Malleoli pallid.

Measurements of ♂.—Total length 53; length of head-plate $9\frac{3}{4}$ and equal to the width; length of mandible 13, width 5; length of flagellum $7\frac{1}{2}$; length of palp 55, tibia 18, metatarsus + tarsus 17; length of III. leg 50; length of IV. leg 76, tibia 17, metatarsus 15.

Locality.—One adult ♂ (type, No. 3788) from Naroep, Great Bushmanland, Namaqualand Div., collected in March, 1898, by Mr. Max Schlechter, who has discovered no less than three new Solifugæ in Bushmanland.

SOLPUGA VENOSA, n. sp.

(Figs. 18, 18a.)

♂ (*Type*).—*Flagellum* reaching back beyond the middle of the mandible but terminating some distance in front of the eye-tubercle. Basal enlargement high, rounded, the upper edge forming a short sharp ridge in the posterior part. Procurrent portion of flagellum extremely short, the anterior bend situated above or very slightly anterior to the first tooth of the jaw and very close to the basal enlargement. Recurrent portion almost touching the basal enlargement, compressed from above and below; the anterior three-fourths nearly straight (except quite anteriorly), becoming slightly narrower posteriorly (when seen from above), where it is bifid, the median branch forming a short sharp tooth, while the lateral, which forms the distal fourth of the recurrent portion, is much longer, lightly sinuate above, with the apex laterally compressed and dilated above into a knife-like edge.

Upper jaw of mandibles with the first and second tooth strong, straight, followed by a pair of smaller teeth (the first of which is very minute), and another large one at the end of the single series. Terminal fang short and weak, curved downwards and slightly out-

wards at the apex, flattened at the base above and provided on the inner side with a minute tooth or weak tubercle. *Lower jaw* with 2 large teeth and a small tooth between them, just in front of the hinder one.

Colour.—Head-plate yellowish, the anterior portion reddish, infuscated just behind the pale anterior border; mandibles yellowish at the sides, reddish above; three posterior pairs of legs reddish, the basal joint or joints yellow below and behind, especially in the last pair; tarsi pale yellow; tibiæ and some of the femora with branched crimson veins on the outer surface. Tergal plates of abdomen deep black, the soft skin on each side of them crimson, the rest of the lateral surface and the under side pale. Hairs on the legs pale yellow or somewhat reddened, those on the mandibles and some on the head-plate reddish; hairs on the dorsal, lateral, and under surfaces of the abdomen uniformly golden yellow. Malleoli infuscated at apex.

Locality.—1 ♂ (type, No. 3801), captured about twenty miles east of Pietersburg, Zoutpansberg Distr., Transvaal, by the Rev. J. W. Daneel.

Measurements.—Total length 33; length of head-plate $5\frac{1}{2}$, width $6\frac{1}{2}$; length of mandible $8\frac{1}{2}$, width 3, length of flagellum $5\frac{1}{4}$; palps wanting; length of III. leg 26; length of IV. leg 42, tibia $9\frac{1}{4}$, metatarsus 8.

SOLPUGA CUNEICORNIS, n. sp.

(Figs. 20, 20a.)

♂.—*Flagellum* short, reaching a little distance behind the basal enlargement, but not as far as the middle of the mandible. The basal enlargement high, triangular in outline, the posterior edge convex, the antero-superior edge quite straight, strongly inclined forwards and forming a sharp angle with the posterior edge above. This angle is caused by the upper edge being produced into a thin, high, vertical, lamellar keel. Shaft extremely broad at the anterior bend (which is a little behind the level of the first tooth of upper jaw), being here almost *twice* the width of the fang below it, the recurrent portion strongly flattened anteriorly and gradually narrowing towards the middle, where a slight twist round the axis occurs. Seen from above the anterior half of the recurrent portion thus appears foliaceous and cuneiform, and the distal half subulate; but from the side the anterior half appears filiform, while the distal half, although still subulate in appearance, is a little broader anteriorly

than when viewed from above. The distal half is also slightly bent outwards from the twist, while the foliaceous anterior half is furnished above with a number of longitudinal striæ and a wider paler line along the middle, like the leaf of a palm.

Upper jaw of mandibles with the terminal fang short and rather weak, moderately curved downwards and outwards but without sigmoid flexure, the upper surface rather flattened and slightly dilated internally, the dilation ending angularly or in a minute tooth anteriorly (Fig. 20a). First tooth of upper jaw small, second tooth large, third and fourth small, about as large as the first, fifth (last tooth of the single series) large. *Lower jaw* with 2 large curved teeth and a smaller tooth between, just in front of the hinder tooth.

Colour.—Ground colour a very pale yellow, but the upper surface and the legs much darkened with purplish black and in places marmorate. Head-plate finely marbled with purplish black, darker near the periphery, more yellowish in the centre, a fine, median, longitudinal line yellow; the eye-tubercle black. Mandible only slightly marbled, a lateral and a pair of dorsal stripes on the basal part dark purplish black. Tergal plates of abdomen irregularly tinged with purplish black on a yellow background, the lateral edges bordered by a fine black line. Palps from the distal half of the femur to the apex, also the distal part of the femur, the tibia and the proximal part of the metatarsus of the legs more or less purplish-black. Sides and under-surface of abdomen yellowish brown. Hairs reddish; those on the abdomen paler, reddish yellow. Malleoli pale.

First six or seven dorsal plates of abdomen nearly devoid of fine hairs, but provided with a comparatively small number of isolated, symmetrically disposed, reddish bristles of various sizes, some being very stout, especially six along the hind margin and two nearer the centre of each plate, these similar to the large ones on the eye-tubercle. Sides and under surface of abdomen thickly clothed with soft hairs. Ocular tubercle with a limited number of bristles, which are symmetrically disposed in a regular semicircle of 5-6 setæ round each eye; the anterior bristle stout, being the largest of the row, the posterior ones decreasing successively, the second of the row also long, the third moderate, situated on the summit of the tubercle, the rest small and on the posterior half of the tubercle; between the second and third seta is a fine hair, and there are further a small number of fine hairs (4-6) on the anterior part of the eye-tubercle. Palps with many short, stout spines below on metatarsus (and a few also on tibia and end of femur), in addition to the scopula and truncated bristles.

Locality.—One ♂ (type, No. 3799) from Southern Rhodesia (R. Pillans).

Measurements.—Total length 17; length of head-plate $3\frac{1}{2}$, width 4; length of mandible $4\frac{3}{4}$, width 2; length of flagellum 2; length of palp 18, tibia 6, metatarsus + tarsus $5\frac{1}{4}$; length of III. leg $17\frac{1}{4}$; length of IV. leg 27, tibia 6, metatarsus 5.

SOLPUGA CERVINA, n. sp.

(Figs. 21, 21a.)

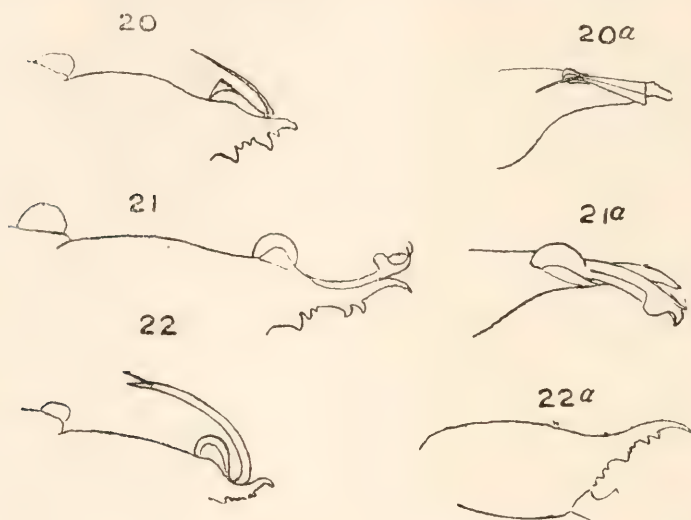
Flagellum.—Basal enlargement high, the upper and hinder borders continuously convex. Whole shaft procurvent,* not at all recurved, broad, strongly flattened from above, curving gently outwards and very slightly upwards, thickened towards the apex and terminating in a short, sharp, strongly curved spur, which is directed outwards and upwards. On the outer edge of the thickened part is a strong, obtuse, lobe-like process directed backwards and upwards; nearly opposite this lobe and slightly distal to it on the inner edge is a curved filiform process, exceeding the apical spur in length and minutely serrated along the outer edge; apex of flagellum situated over or a little anterior to the apex of upper jaw.

Upper jaw of mandibles in ♂ with the first two teeth strong, hooked, and rather remote from the apex of the jaw, followed after a short interval by two smaller teeth, of which the anterior is very minute; fifth or last tooth of the single series strong and hooked. Terminal fang long and slender, with distinct sigmoid flexure, strongly depressed at the base (which bears the two hooked teeth), then curving gently upwards, and then again downwards and strongly outwards at the apex; its surface rather convex above, the inner side not dilated, provided with a minute tooth. *Lower jaw* as usual (in one jaw the first tooth is not larger than the second), the upper surface not sulcate, nor keeled laterally alongside the teeth.

♀.—Between the second and third large tooth of the upper jaw of the mandibles are two small ones, the anterior of which is very minute. Lower jaw with one small tooth between the two large ones. First segment of the abdominal sterna not produced behind at the median angles.

* This species affords an excellent illustration of the alteration in position which the flagellum often undergoes in the process of drying. If a spirit specimen be exposed to the air for a short time, the flagellum curls up until its distal half is quite curved backwards. On relaxing a dry specimen the organ appears to return to its original position.

Colour of ♂ and ♀.—Very much as in *cuneicornis* but not so dark. Ground colour pallid or pale yellowish, but the greater part of the legs and of the upper surface of the body is of a dark purplish tint. Head-plate with the borders and a median line pallid, the central part on each side of the median line marmorate, the eye-tubercle deep black. Mandibles pallid or yellowish, finely marbled with purplish and provided with one lateral and two dorsal, darker, purplish stripes. Tergal plates of abdomen purplish brown; the sides of the abdomen yellowish. The short basal segments of the legs and the basal part of the femur of palps pallid or yellowish; the



Solpuga cuneicornis, n. sp. ♂. Fig. 20, right mandible from lateral side. Fig. 20a, distal part of same mandible from above.

S. cervina, n. sp. ♂. Fig. 21, right mandible from lateral side. Fig. 21a, apex of same mandible from above.

S. fusca, Koch. Fig. 22, right mandible of ♂ from lateral side. Fig. 22a, right mandible of ♀ from lateral side.

under side of the legs, their tibiae and metatarsi, and the apex of the palp more or less pallid or pale yellowish. Hairs on legs and abdomen reddish yellow, those on the head-plate and mandibles darker. Malleoli pallid.

Terga of abdomen with a moderate number of bristly hairs. The palp and IV. leg, or at least their tibiae, as in *cuneicornis* without the under coat of short hairs found in the previous species. Ocular tubercle with about eight distinct bristles and about as many finer hairs, somewhat irregularly arranged, on the anterior half (besides others on the posterior side).

Localities.—(a) One ♂ (type, No. 2845) from the village of Clanwilliam (C. L. Leipoldt, Nov., 1897), and 1 ♀ from the same locality (R. M. Lightfoot).

(b) One ♂ (dry) without a history.

(c) One ♀ from Van Wyks Vlei, Carnarvon Div. (E. G. and D. C. Alston), almost exactly resembling the ♀ from Clanwilliam; in one of the upper jaws the anterior of the two small teeth has all but vanished.

(d) One ♀ from Steinkopf, Namaqualand, and one from Namies, Bushmanland (M. Schlechter), both differing from the typical ♀ in having only one small tooth between the second and third large tooth of the upper jaw. As the anterior of these small teeth is very minute in the typical ♀, I do not consider its absence of specific value, although of course the male must be found in these localities too before the specific identity of these three specimens can be considered certain.

Measurements of typical ♂ and ♀.—Total length ♂ $22\frac{1}{2}$, ♀ 30; length of head-plate ♂ 4, ♀ $3\frac{1}{2}$, width ♂ $4\frac{2}{3}$, ♀ $4\frac{3}{4}$; length of mandibles ♂ $6\frac{1}{2}$, ♀ 8, width ♂ $2\frac{1}{6}$, ♀ $2\frac{1}{2}$; length of palps ♂ $26\frac{1}{2}$, ♀ $23\frac{1}{2}$, tibia ♂ 8, ♀ $7\frac{1}{4}$, metatarsus + tarsus ♂ $8\frac{1}{2}$, ♀ $7\frac{2}{3}$; length of III. leg ♂ 25, ♀ $21\frac{1}{2}$; length of IV. leg ♂ $36\frac{1}{2}$, ♀ 31, tibia ♂ $7\frac{3}{4}$, ♀ $6\frac{1}{3}$, metatarsus ♂ 7, ♀ 6.

SOLFUGA FUSCA, C. L. Koch.*

(Figs. 22, 22a.)

C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 352, 1842; Die Arachniden, xv., p. 76, fig. 1470, ♂, 1848.

Flagellum.—Basal enlargement high, rotundate in outline. Anterior bend of flagellum situated behind the level of the first tooth of the jaw and nearly over the second tooth. Recurrent portion rod-like and comparatively thick, being as thick as or thicker than the terminal fang of jaw and extending back some distance behind the middle of the mandible, but not reaching the head-plate. In one specimen the shaft is distinctly compressed, the flattened side being turned upwards and outwards, so that the inner edge lies higher than the outer; in the other specimen the flagellum is scarcely compressed and almost cylindrical. The sides of the shaft are parallel, but at

* These specimens, which I had described as new, were kindly identified from Koch's type by Professor K. Kraepelin.

the apex the flagellum terminates in a short, sharp, subulate portion, at the base of which a fine, straight, pallid, bristle-like process springs from the upper edge and extends backwards beyond the apex.

Upper jaw of mandibles in ♂ (fig. 22) much resembling that of *cervina*, the first two teeth large, almost straight, followed by two small teeth and a large one; the terminal fang rather long and slender, with strong sigmoid flexure, strongly depressed at the base, curving first upwards and then at the apex strongly and suddenly downwards. *Lower jaw* with two strong curved teeth and *two or three* small ones between them just in front of the hind tooth; the upper surface not sulcate laterally alongside of the teeth.

Female with 2 small teeth in the upper jaw, between the second and third large tooth, and 2-3 *small ones* in the lower jaw between the two large ones (Fig. 22a); in one specimen there is also a small tooth between the first and second large tooth in the upper jaw.

Colour.—Upper surface of the mandibles, the whole of the head-plate (except the white anterior margin), the tergal plates of the abdomen, and the legs ferruginous-black; the sides and under surface of the mandibles, the under surface of the thoracic segments and of the basal joints of the legs pale yellowish; under side of palp and of the three posterior femora paler than the upper side. Ventral plates of abdomen pale, with blackened lateral borders in the ♀, but more or less darkened in the ♂. The soft skin on the sides of the abdomen pale in the ♀, with blackened upper and lower borders and thinly clothed with pallid hairs; in the ♂ this soft skin is quite hidden by a thick coat of silvery white appressed hairs.* Malleoli blackened distally. Hairs on the mandibles, head-plate, and legs dark brown, a few yellowish brown, those on the posterior terga very dark, contrasting strongly with the pale or white hairs on the sides of the abdomen.

First abdominal sternite not produced behind at the median angles in the ♀.

Measurements.—Total length ♂ 16, ♀ 16; length of head-plate ♂ $2\frac{1}{4}$, ♀ $2\frac{1}{5}$, width ♂ $2\frac{2}{3}$, ♀ $2\frac{1}{2}$; length of mandible ♂ $3\frac{1}{2}$, ♀ 4; length of flagellum $2\frac{1}{5}$; length of palp ♂ 12, ♀ 9, tibia ♂ $3\frac{1}{4}$, ♀ $2\frac{3}{4}$, metatarsus + tarsus ♂ 4, ♀ $8\frac{1}{2}$; length of III. leg ♂ $11\frac{1}{2}$, ♀ 9; length of IV. leg ♀ 15, tibia ♂ $3\frac{1}{4}$, ♀ 3, metatarsus ♂ $3\frac{3}{4}$, ♀ 3.

Locality.—2 ad. ♂ from near Cape Point (*R. M. Lightfoot*), 1 ♀

* Koch describes the sides of the upper surface of the abdomen as ochre-yellow in the ♂.

from side of Table Mountain, near Rondebosch (*F. Treleaven*), 1 ♀ from Wynberg (*F. Purcell*); also two dried females; all these specimens from the Cape Peninsula.

II.—The *VINCTA* Group.

Dentition of the upper jaw very dissimilar in the two sexes; the teeth of the distal or single series not exceeding five in number and separated into groups by one or two long untoothed intervals in the adult male (the distal group often obsolete) (figs. 23–27); teeth in the ♀ as in Group. I.

In the first abdominal sternite the posterior median angles of the halves are more or less produced into a rounded lobe in the adult ♀. Metatarsus of palps as in Group I. In the ♂ the upper margin of the basal enlargement of the flagellum is strongly elevated, forming a high, thin, upright keel along its whole length, and the terminal fang of the upper jaw has the inner edge of the upper surface distinctly elevated keel-like to form a groove for the reception of the procurent portion of the flagellum. When the bend of the flagellum is remote from the apex of the fang, the distal part of this keel lies free and is very distinct; if, however, the flagellum almost reaches the apex it fills up almost the entire groove, leaving only the anterior angular extremity of the keel free. (In *lateralis*, Koch, this keel is obsolete.) Palps exceeding or equalling the III. leg in length. Posterior legs with the hairs either as in Group I., or arranged in a mane, or the long ones very numerous.

All the species of which the habits are known to me are diurnal (*lateralis*, *vincta*, *spectralis*, and others).

The females of this group may generally be recognised from those of Group I. by the colouration of the abdomen (the hairs on the sides being white or yellow, and nearly always strongly contrasting with the dark hairs on the posterior dorsal plates), and often also by the presence of a mane of long or short hairs on the hind legs. The adult ♀ is further easily recognisable by the produced hind angles of the first abdominal segment—a character not met with in immature specimens nor in any species not included in this group, as far as at present known.

The species which belong here are: *vincta*, Koch, *villosa*, n. sp., *spectralis*, n. sp., *lateralis*, Koch, *cultrata*, n. sp.; also the following, which are unknown to me: *marshalli*, Poc., *derbiana*, Poc., *producta*, Karsch, &c.

SOLPUGA VINCTA, C. L. Koch.

(Fig. 23).

C. L. Koch, Arch. f. Naturg. viii., Bd. i., p. 352, 1842; Die Arachn. xv., p. 74, fig. 1468, ♂, 1848. *Non* Simon, Ann. S. Ent. Fr. (5) ix., p. 110, pl. 3, fig. 6, 1879.

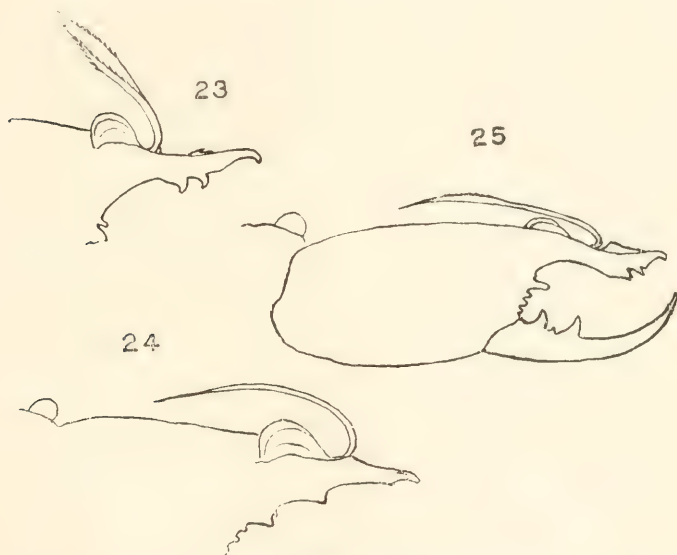
Flagellum.—Basal enlargement high, rounded, the upper edge produced upwards into a high, sharp, vertical keel along its whole length. Procurrent portion very short, the anterior bend remote from the apex of fang and situated behind the level of the second tooth. Recurrent portion straight and rather erect, inclined at an angle of 60° or more to the horizontal * and very short, being about equal in length to the terminal toothless portion of the lower jaw; in form spindle-shaped when seen from the front, increasing in width from the bend to the middle and tapering thence to a fine point; the transverse section through the middle T-shaped, the long bar of the T representing the section of the main blade, which is strongly flattened from before and behind (or above and below), while the short bar represents that of the median side; the anterior (upper) side, therefore, widely sulcate and facing slightly inwards; the three free edges of the distal half of the recurrent portion deeply and finely serrato-lacerated. *Upper jaw of mandibles in ♂* with the first two teeth large and strongly hooked at apex, followed by a long, concave, toothless interval, after which a small tooth confluent with a large one follows, terminating the single series. Terminal fang moderate, inclining slightly downwards for about one-third of its length from the base, then slightly upturned, the apex suddenly and strongly curved downwards but not outwards; the upper surface sulcate at base, its inner edge flanked by a thin, upright, blade-like keel, which is situated above the first tooth; this keel finely serrated in its anterior half, provided with a sharp tooth directed forwards in the middle, but entire and higher in the posterior half. No tooth on the inner side of the fang. *Lower jaw* with two large curved teeth and a smaller one between them, nearer the hind tooth; upper surface not sulcate, its outer edge rounded off in the toothed region.

♀ and juv.—With one small tooth between the second and third large tooth in the upper jaw, and between the two large ones in the lower jaw.

Colour.—Head-plate and upper surface of mandibles yellowish brown in the male but generally much darker and ferruginous in

* In spirit specimens; but much more nearly horizontal when the specimen is allowed to dry.

the ♀ and young specimens. Sides of the mandibles and the under surface of the body brownish yellow; limbs ferruginous-brown, mostly darker in the ♀ than in the ♂, in both almost black distally. Legs with dark brown and whitish hairs intermixed. Hairs on head-plate and mandibles dark brown. Dorsal plates of abdomen ferruginous brown in the middle and blackened laterally, the posterior plates wholly ferruginous-black, especially in the ♂, the hairs on the plates dark brown, those on the posterior plates almost black. Sides of the abdomen ferruginous-black in the male, thickly covered with silvery white, somewhat iridescent hairs; the sides yellowish



Solpuga vineta, Koch. Fig. 23, apex of left mandible of ♂ from inner side.

S. villosa, n. sp. Fig. 24, left mandible of ♂ from inner side.

S. spectralis, n. sp. Fig. 25, right mandible of ♂ from lateral side.

brown in the adult ♀ and covered, although somewhat less thickly, with yellowish white hairs, those on the upper part bordering the tergal plates bright yellow and brownish yellow, iridescent. Abdominal sterna brown or yellowish brown, infuscated at the lateral borders. Legs without trace of a mane. Malleoli with infuscated edges.

Measurements.—Total length ♂ 23, ♀ 31; length of head-plate ♂ $3\frac{2}{3}$, ♀ $4\frac{1}{5}$, width ♂ 4, ♀ $4\frac{2}{3}$; length of mandibles ♂ 6, ♀ 8, width ♂ $2\frac{1}{4}$, ♀ $2\frac{3}{4}$; length of flagellum 2; length of palp ♂ $16\frac{1}{2}$, ♀ 17,

tibia ♂ 5, ♀ 5, metatarsus + tarsus ♂ $5\frac{1}{4}$, ♀ 6; length of III. leg ♂ 15, ♀ 16; length of IV. leg ♂ 25, ♀ 26, tibia ♂ $5\frac{1}{3}$, ♀ $5\frac{1}{3}$, metatarsus ♂ $4\frac{3}{4}$, ♀ $4\frac{3}{4}$.

Locality.—2 ad. ♂, several ad. ♀ and a number of young from round about Cape Town (Signal Hill, Devils Peak, *L. Péringuey*, *R. M. Lightfoot*, *F. Purcell*).

This species is diurnal in habits. The posterior median angles of the halves of the first abdominal sternite are produced in the adult female, but not produced in the male and immature specimens.

SOLPUGA VILLOSA, n. sp.

(Fig. 24.)

Flagellum reaching back beyond the middle of the mandibles and passing high above the basal enlargement. Basal enlargement distinctly longer than high, being produced anteriorly; its upper and posterior margins continuously rounded; upper margin strongly elevated along its whole length to form a well-developed keel, which, however, is much less in height than the exposed, outer, turgid portion. Procurrent portion rather short, the anterior bend bold and high, remote from the apex of fang, situated about midway between this apex and the hind edge of the basal enlargement. Recurrent portion cylindrical, tapering distally to a fine bristle-like point, the third quarter of its length alate along the outer side, being furnished with a thin fin-like keel, which nearly equals the diameter of the shaft in height.

Upper jaw of mandibles in ♂ with peculiar dentition; the first tooth very small and near the apex, the second large and isolated, being far removed from both the first and the third, which is small and closely followed by the large last tooth of the single series. Terminal fang long and strong, very straight, its upper side parallel to that of the mandible, but on a slightly lower level; there is no flexure in the vertical plane, but the distal part is slightly bent outwards and the apex slightly downwards; upper surface of fang sulcate throughout, the median keel high beneath the anterior bend of flagellum, but low anteriorly to this and scarcely toothed. *Under jaw* with two strong teeth and a small one between them, just in front of the hind tooth, the upper surface distinctly *grooved* along the outer side of the row of teeth, the outer upper margin being strongly prominent and crest-like.

♀ and young.—One small tooth between the second and third

large tooth in upper jaw, and between the two large teeth in lower jaw.

Colour.—♂ brownish yellow to yellowish or orange-brown. Malleoli not black-edged. Bristles on the head-plate and mandibles dark brown, the dense short hairs on these parts and on the legs pale yellowish; the long hairs on the hind legs yellowish white or almost white, yellowish at the base, those on the under side of this leg, excepting on the tarsus, very numerous, forming a long, well-developed mane, the single hairs of which equal half the metatarsus in length; those on the upper side of the hind leg rubbed off in the type. Abdomen with the sides of the anterior and the whole surface of the posterior tergal plates thickly covered with intensely black hairs, the anterior plates with short yellowish hairs in the middle. Sides of the abdomen thickly clothed with longer, very pale, whitish-yellow hairs.

♀.—The short pubescence, especially that on the legs, very dense and soft and of a bright yellow colour, that along the upper and under sides of the last pair of legs longer, forming a very dense, short, bright yellow mane, extending along almost the whole length of the leg. The length of the single hairs of this mane is much less than in the case of the ♂, being only one-third of the length of the metatarsus. Sides of the abdomen densely covered with very gaudy yellow or partly orange-coloured hairs.

First segment of the abdominal sterna with the posterior median angles produced in the ad. ♀.

Measurements of typical ♂ and ♀.—Total length (bodies shrivelled) ♂ 28, ♀ 43; length of head-plate ♂ 6, ♀ 7, width ♂ 7, ♀ 10; length of mandibles ♂ 10, ♀ 13, width ♂ $3\frac{1}{2}$, ♀ $4\frac{3}{4}$; length of flagellum $6\frac{1}{2}$; length of palp ♂ $28\frac{1}{2}$, ♀ $26\frac{1}{2}$, tibia ♂ $9\frac{1}{4}$, ♀ $8\frac{1}{4}$, metatarsus + tarsus ♂ $9\frac{1}{4}$, ♀ $9\frac{1}{2}$; length of III. leg ♀ $25\frac{1}{2}$; length of IV. leg ♂ 47, ♀ 44, tibia ♂ 10, ♀ 9, metatarsus ♂ 10, ♀ 9.

Localities.—(a) *Types*: An ad. ♂ and ♀, dried (No. 1048), labelled "S. Africa, 1875" (*E. Hughes*).

(b) One dry specimen, apparently nearly mature, from Concordia, Namaqualand Div., 1893.

(c) One dry specimen, similar to the last, from Fraserberg (*H. Findlay*, 1888). All these specimens appear to belong to one species, which is remarkable for the denseness of the short yellow pubescence on the palps.

SOLPUGA SPECTRALIS, n. sp.

(Fig. 25.)

♂.—*Flagellum* reaching back beyond the middle of the mandible, passing close above the basal enlargement,* the latter shaped as in *S. villosa*; the anterior bend short and sharp, remote from the apex of the fang and situated some distance behind the distal group of teeth. Recurrent portion tapering distally to a filiform apex; the distal half much flattened from the sides, finely and deeply serrated along its upper edge, the lower edge thin but entire.

Upper jaw of mandibles with three distal teeth close together, of which the first is very small, triangular and keel-like, the second long and pointed, the third large and bifid at the apex; then follows a long, strongly concave, toothless interval, and finally a very long tooth immediately preceded by a very minute denticle; the posterior double series runs almost at right angles to the distal series. Terminal fang long, inclining slightly downwards from the base for about half its length, then sub-horizontal and curved outwards till near the apex, which is bent downwards; the upper surface provided along the inner edge throughout more than half the length of the free part before the flagellum with a very high keel, situated over the distal group of teeth, the upper edge of the keel slightly irregular but not toothed; at the commencement of the bend the flagellum is situated in the middle of the upper surface of the fang, and occupies almost the entire width. *Lower jaw* with two strong teeth and a small one just midway between them, the upper surface not grooved or keeled laterally in the toothed region.

Colour.—Legs and the upper surface of the body ferruginous, the mandibles paler, yellowish brown above, under surface of mandibles, of body, and of the basal joints of the legs pale yellowish. Legs and palps distally darker and ferruginous-black. The thorax, abdomen, and the three hind pairs of legs very densely covered with long soft hairs, those on the thorax and the anterior abdominal terga whitish brown in colour, the rest white; those on the hind leg enormously long and very numerous, but not forming a mane, the single hairs much longer than the metatarsus; on the posterior end of the abdomen above are a few black hairs. The bristles on the head-plate and mandibles brown, as are also most of the hairs on the palps. Malleoli black-edged.

Measurements.—Total length 28; length of head-plate 5, width 6;

* As the specimen is dried, the flagellum may have been more erect in the living animal.

length of mandible $8\frac{3}{4}$, width 3; length of flagellum $4\frac{2}{3}$; length of tibia of palp 8, tarsus + metatarsus 9; length of IV. leg 44, tibia $8\frac{1}{2}$, metatarsus $8\frac{1}{4}$.

Locality.—One ♂, dried (No. 1158), from Klipfontein, near Steinkopf, Namaqualand Div. (*L. Péringuey*, 1885).

SOLPUGA LATERALIS, C. L. Koch.

(Figs. 26–26b.)

C. L. Koch, Arch. f. Naturg. viii., Bd. i., p. 353, 1842; Die Arachn., xv., p. 82, fig. 1474, ♂. 1848.

Flagellum.—Basal enlargement very high, rotundate, the whole upper margin elevated in the form of a very high and thin laminar keel. Procurent portion very long, longer than the lamina, the anterior bend near the apex of the jaw and farther forward than the first large tooth. Recurrent portion very long and slender, gradually tapering towards the apex, cylindrical and almost straight, reaching back beyond the eyes and passing high above the basal enlargement; the apex not needle-pointed but somewhat blunted by a very minute dilation of the upper edge (fig. 26b).

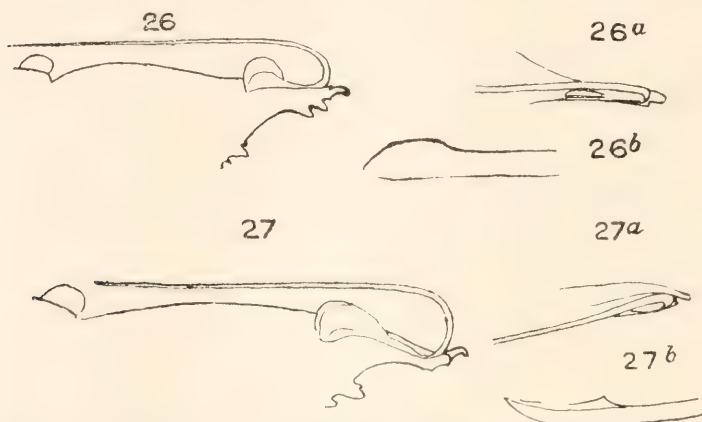
Upper jaw of mandibles in ♂ with three teeth near the apex, followed by a long, slightly concave or nearly straight, toothless interval; the first tooth very small and weak, the second and third straight and strong; first tooth of the basal series small, the second strong and straight and as large as the distal pair. Terminal fang curved downwards at the tip, the upper surface flattened and dilated inwards under the bend of flagellum, the dilated part ending anteriorly in a minute tooth but scarcely elevated along the inner edge, the inner keel of the upper surface being practically obsolete; the procurent portion of the flagellum occupies almost the entire width of the fang in the region of the anterior bend. Upper side of the fang on a level with that of the rest of the jaw and therefore not at all depressed, its under side with a convexity at the base, which bears the two large teeth. *Lower jaw* with a pair of large teeth and a small tooth between them, just in front of the hind tooth; the upper surface not sulcate laterally, its outer edge rounded off in the toothed region.

♀ and young with only one small tooth between the second and third large tooth in the upper jaw and between the two large teeth in the lower jaw.

Colour.—Head-plate and upper surface of mandibles brownish

yellow to brown, the sides and under surface of the latter and the under surface of the body yellowish; legs ferruginous-black, paler at the base, especially on the under side; head-plate infuscated behind the anterior border. Palps yellowish in the proximal part, becoming darker ferruginous distally, nearly black at the apex. Terga and sides of abdomen entirely black-ferruginous, the latter densely covered with silky yellowish white hairs; under side darker posteriorly. Malleoli infuscated at the edges. Hairs on the abdominal terga dark brown, those on the legs brown, many of those on the posterior pairs, especially in the ♂, whitish brown.

Posterior median angles of the halves of the first abdominal



Solpuga lateralis, Koch. ♂. Fig. 26, left mandible from inner side. Fig. 26a, apex of same mandible from above. Fig. 26b, apex of flagellum from the side, more highly magnified.

S. cultrata, n. sp. ♂. Fig. 27, left mandible from inner side. Fig. 27a, apex of same mandible from above. Fig. 27b, apex of flagellum from the side, more highly magnified.

sternite produced in the adult ♀ but not produced in the immature and ♂ specimens.

Measurements.—Total length ♂ 18, ♀ 24; length of head-plate ♂ 3, ♀ $3\frac{1}{2}$, width ♂ $3\frac{2}{3}$, ♀ 5; length of mandibles ♂ $5\frac{1}{4}$, ♀ 7, width ♂ 1·8, ♀ $2\frac{2}{3}$; length of flagellum 5; length of palp ♂ $12\frac{2}{3}$, ♀ $14\frac{1}{4}$, tibia ♂ 3·8, ♀ 4, metatarsus + tarsus ♂ $4\frac{1}{4}$, ♀ $4\frac{1}{2}$; length of III. leg ♂ $12\frac{2}{3}$, ♀ $13\frac{2}{3}$; length of IV. leg ♂ 19, ♀ 22, tibia ♂ 4, ♀ $4\frac{1}{2}$, metatarsus ♂ $3\frac{3}{4}$, ♀ 4.

Locality.—1 ad. ♂, 1 ad. ♀, and 1 juv. from Port Elizabeth (*J. L. Drège*, 1898); I have also examined an ad. ♂, kindly lent by Mr. West, of Port Elizabeth.

Mr. Drège informs me that this species is diurnal.

SOLPUGA CULTRATA, n. sp.

(Figs. 27-27b.)

Flagellum passing back a little distance above the basal enlargement and reaching or almost reaching the eye-tubercle. Basal enlargement shaped as in *villosa*. Procurrent portion long, the anterior bend very high and bold, situated close behind the apex of the fang. Recurrent portion slender and needle-like, the upper side minutely cultrate at the apex, being furnished here with a short, sharp, dark brown keel, which terminates anteriorly in a sharp angle (fig. 27b).

Upper jaw of mandibles practically toothless distally, strongly convex on the under side below the bend of flagellum and provided here with a couple of obsolete tubercles, representing the distal teeth; the convexity followed by a long, concave, untoothed portion, terminated behind by a long and strong tooth, which bears a small denticle on its anterior surface. Terminal fang inclined downwards from the base and depressed in the middle above, the weak apical part tilted upwards, but the actual tip is curved downwards and inwards; sigmoid flexure distinct. The inner half of the broad upper surface of the fang deeply grooved longitudinally for the reception of the flagellum, the short, free, anterior portion of the groove situated on the median side of the apical fang and terminating low down on a level with the under surface of the latter; the apex of the groove is emarginated and very wide, so that the lower jaw can close against it. The lateral half of the fang raised high above the level of the procurrent portion of the flagellum on its outer side, equalling the latter in width at the bend and continued forwards beyond this point, passing over directly into the tip of the fang (fig. 27a). *Lower jaw* with two large teeth and a small tooth between them, just in front of the hind one; the jaw *deeply grooved* above on the outer side of the teeth, the outer upper edge forming a strong dark brown keel, which is highest anteriorly and terminates rather abruptly considerably in front of the first tooth.

Colour.—Dorsal and upper half of the lateral surface of mandibles, the head-plate, the dorsal and lateral surfaces of abdomen, and the limbs infuscated; the under surface of the mandibles, of the body, and of the bases of the legs pale yellowish. Hairs on the limbs white, the last pair of legs without mane; * the bristles on the mandibles and head-plate infuscate, or yellowish at base and infuscated distally; femora of legs, the head-plate, and the sides of the mandibles thickly covered with minute white hairs. Tergal plates of abdomen some-

* As these legs are somewhat rubbed, this point is not quite certain.

what rubbed, but the hairs on the posterior segments are dark blackish brown; sides of the abdomen thickly covered with yellowish white hairs. Malleoli pale, not black-edged.

Dentition in young.—One small tooth between the second and third large ones in the upper jaw and between the two large teeth in the lower jaw.

Measurements of ♂.—Total length 40; length of head-plate 5, width 7; length of mandibles 9, width $3\frac{1}{4}$; length of flagellum $8\frac{1}{4}$; palp *very stout*, its length 23, tibia $7\frac{1}{5}$, metatarsus + tarsus $7\frac{1}{5}$, width of tibia $1\frac{5}{16}$; length of III. leg 21; IV. leg incomplete, tibia $6\frac{1}{2}$, metatarsus 6.

Locality.—One ♂, dried (type, No. 1051), from Durban, Natal (*J. Innes*, 1885); 1 juv. from the same locality (*Col. J. H. Bowker*).

This species is allied to *S. hostilis*, White, in which, however, the anterior curve of the flagellum is sharp and short, and the anterior third or half of the recurrent portion is not horizontal but inclined, with the under side concave. In *cultrata* the anterior curve is much higher, so that the anterior half of the recurrent portion is not concave below but lies in the same horizontal plane with the posterior half.

III.—The LINEATA Group.

Dentition of the upper jaw similar in the two sexes, the distal or single series composed of a small or moderately large distal tooth, followed by 1–3 small teeth and one large one, then 3–5 small teeth, and finally another large one (figs. 28, 29).

Palps considerably shorter than the III. leg; the pointed and truncated hairs of the metatarsus mostly replaced by hairs of various lengths, which are minutely bifid at the apex. In the ♂ the metatarsus of the palps is not scopulate below. Hairs on posterior legs mane-like, at least on the under side.

Only two species are comprised in this group, viz., *lineata*, Koch, and *brevipalpus*, n. sp.

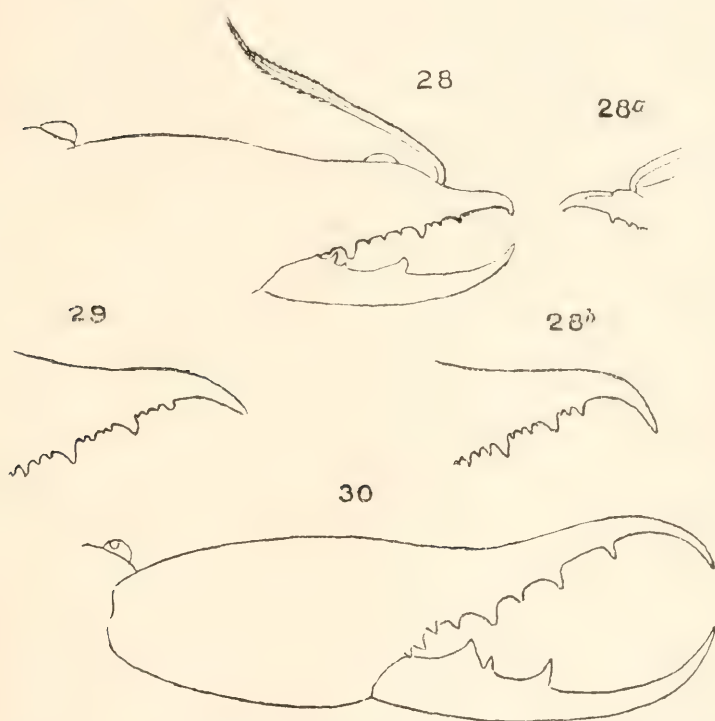
SOLPUGA LINEATA, C. L. Koch.

(Figs. 28–28b.)

C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 353, 1842; Die Arachn., xv., p. 80, fig. 1473, ♂, 1848.

♂.—*Flagellum* reaching back a little behind the middle of the mandibles. Basal enlargement small, rotundate, the free upper

portion strongly compressed, not turgid below on the outer side. Procurent portion much longer than the basal enlargement, the anterior bend rather remote from the apex of the jaw and about on a level with the second tooth. Recurrent portion passing a little distance above the basal enlargement, stout anteriorly, but flattened and thin posteriorly for more than half its length; from the bend it slightly increases in width up to the commencement of the distal



Solpuga lineata, Koch. Fig. 28, right mandible of ♂ from outer side. Fig. 28a, apex of same mandible from inner side. Fig. 28b, apex of mandible of nearly mature or ♀ specimen.

S. brevipalpus, n. sp. Fig. 29, apex of mandible of ♀.

S. nigro-braccata, n. sp. Fig. 30, right mandible of ♀ from lateral side.

third, whence it tapers to a long fine point; the flattened portion feathered along the edges and slightly twisted, so that the upper surface comes to face inwards distally; the shaft straight, but curving upwards distally.

Upper jaw of mandibles with the first tooth small or moderately

large, the second and third small, the fourth strong and curved, closing down just in front of the first tooth of the lower jaw; then follows a series of 3-5 small teeth and finally another strong tooth, which terminates the single series; the first tooth of the single series is always larger than the other small teeth, but smaller than the two large teeth. Terminal fang strong, curved downwards and outwards at the apex, the upper surface sulcate, being furnished on the inner edge with an upright smooth keel, which becomes very low anteriorly and terminates in a tiny angle or tooth at the commencement of the apical curve (fig. 28a). The under side of the upper jaw is perfectly straight, and there is no flexure except at the tip. Lower jaw with two large teeth and a small one between them just in front of the hind tooth but remote from the anterior one; the upper surface of jaw not sulcate laterally, its outer edge somewhat angular but not carinate on the lateral side of the teeth.

Colour.—Yellow, two longitudinal stripes on the thorax and abdomen, four on the head-plate, and two on each of the mandibles infuscate or black; the upper surface of all of the limbs blackened or dark brown, or the anterior limbs not infuscate. Pubescence of a beautiful silvery white colour, the long hairs on the head-plate and mandibles and many of those on the palps brown. Hairs on the sides of the abdomen long and silvery white. Hind legs with the tibia and metatarsus thickly covered above with enormously long silvery hairs, far exceeding the metatarsus in length, the hairs on the lower side of these joints and on the femora shorter, forming a delicate mane.

Dentition in young.—Upper jaw with the first tooth large, followed by one or two small ones, then another large one, followed by 4 small ones, after which comes the large last tooth of the single series. Lower jaw with one small tooth between the two large ones, which are closer together than in the ad. ♂.

Measurements of ad. ♂ and immature specimen from Ookiep.—Total length ♂ 32, juv. 25; length of head-plate ♂ 5, juv. $3\frac{3}{4}$, width ♂ $6\frac{1}{4}$, juv. $4\frac{3}{4}$; length of mandible ♂ 11, juv. $7\frac{1}{2}$, width ♂ $3\frac{1}{3}$, juv. $2\frac{1}{3}$; length of flagellum $4\frac{2}{3}$; length of palp ♂ $16\frac{1}{3}$, juv. $11\frac{1}{4}$, tibia ♂ $5\frac{1}{3}$, juv. $3\frac{1}{4}$, metatarsus + tarsus ♂ $6\frac{2}{3}$, juv. $4\frac{2}{3}$; length of III. leg ♂ 20, juv. $14\frac{1}{3}$; length of IV. leg ♂ $33\frac{1}{2}$, juv. $21\frac{1}{2}$, tibia ♂ 6, juv. 4, metatarsus ♂ $6\frac{2}{3}$, juv. $4\frac{1}{5}$.

Localities.—(a) 4 ad. ♂ and 1 juv. (all dried) from Ookiep, Namaqualand Div. (L. Péringuey, 1885). In these specimens the palps have no black stripes and the two infuscate stripes on the mandibles do not unite anteriorly.

(b) 1 ad. ♂ (dried) from Van Wyks Vlei, Carnarvon Div. (*E. G. Alston*, 1885). Palps and I. leg with a black longitudinal stripe; the two black stripes on the mandibles unite anteriorly.

(c) 1 ad. ♂ (in spirits) resembling the previous specimen, but without a history.

SOLPUGA BREVIPALPUS, n. sp.

(Fig. 29.)

♀.—*Upper jaw of mandibles* with the first tooth rather small, followed by 2–3 very small teeth and a large one; between the latter and the large last tooth of the single series are 3–5 very small teeth. *Lower jaw* with two large teeth and a small one between them, just in front of the hind tooth; the apex of the anterior tooth remote from the others, but its basal portion extends backwards to the small tooth in the form of a low keel.

Colour.—Pale yellow, the apex of the jaws and the eyes blackened. All the terga or only the posterior ones broadly ferruginous-brown at the lateral borders, the last segment entirely ferruginous-brown. Metatarsus, tibia, and upper surface of femur of IV. leg and the apex of the palps more or less reddish brown. The hairs mostly white; the IV. leg provided on the upper side of the tibia and metatarsus with a very delicate silky mane of enormously long white hairs, and with a shorter mane on the under side of these and of the femoral segments.

Measurements.—Total length 31; length of head-plate $3\frac{1}{2}$, width 5; length of mandible $7\frac{1}{3}$, width $2\frac{1}{2}$; palps remarkably short, $11\frac{1}{2}$ mm. long and only two-thirds of the length of the III. leg, tibia of palp $3\frac{1}{2}$, metatarsus + tarsus $4\frac{1}{3}$; length of III. leg 17; length of IV. leg $27\frac{1}{4}$, tibia 5, metatarsus 5.

Locality.—Four specimens (No. 2830) from Naroep, Great Bushmanland, Namaqualand Div. (*Max Schlechter*, Feb., 1898).

IV.—*Species of Uncertain Position.*

SOLPUGA NIGRO-BRACCATA, n. sp.

(Fig. 30.)

Jaws of mandibles extremely long; the single series of the upper jaw composed of 4 strong teeth, of which the third is only a little smaller than the other three, and the first is far removed from the

second, the space between these teeth being sub-equal to that between the second and the fourth. *Lower jaw* with two large teeth and a smaller one between them, just in front of the hind one.

Colour.—Yellowish; the jaws paler, with blackened apex. Tarsus and apical portion of metatarsus of palps and the hair on these parts dark blackish brown; tibia of palps infuscated near the apex; IV. leg with the apex of the femur, the whole tibia and the basal portion of the metatarsus deep black. The soft skin on the sides of the thoracic segments deep black above the bases of the palps and first three pairs of legs, the blackened areas almost meeting in the median line above in the segment bearing the III. pair of legs. Hairs, including those on the blackened parts of the IV. leg, pale yellowish.

Palps thickly clothed with soft silky hairs, those on the under side longer, about twice the diameter of the limb in length; all the legs with similar hairs, those on the under side of the femora forming a mane; hairs on tibia and metatarsus of IV. pair not forming a distinct mane, although somewhat longer on the upper and under sides.

Measurements.—Total length 45; length of head-plate 6, width $7\frac{1}{3}$; length of mandible 14, width $3\frac{1}{2}$; length of palp $25\frac{1}{4}$, tibia $8\frac{2}{3}$, metatarsus + tarsus 8; length of III. leg $26\frac{1}{2}$; length of IV. leg 40, tibia $7\frac{1}{3}$, metatarsus $7\frac{1}{2}$.

Locality.—One specimen, apparently an ad. ♀ (No. 1175), from Damaraland (*G. Tatlow*, 1889).

Since this paper went to press, specimens of all the species, both new and old, with the exception of *C. inerme*, *S. villosa*, *spectralis*, *nigro-braccata* and *cultrata*, nn. spp., were submitted to Professor K. Kraepelin, who kindly compared them with his own and Koch's types. I am wholly indebted to him for the identification of *H. lanatus* (Koch), *S. lethalis*, and *fusca*, Koch.

All specimens mentioned in this paper are preserved in spirits, unless the contrary is stated.

XII.—*New South African Scorpions in the Collection of the South African Museum.*—By W. F. PURCELL, Ph.D., *First Assistant.*

(Preliminary communication.)

PARABUTHUS NEGLECTUS, n. sp.

Colour yellow, the abdomen often darkened with green or brown. Cauda very like that of *capensis*, Hemp. and Ehrbg. (= *iros*, Koch = *planicauda*, Poc.), but the upper hind edge of segment 2 is strongly elevated and curved forwards in the middle, forming a characteristic tongue-like elevation, which is also developed, although less strongly, in the third segment. Segments 1–4 10-carinate, of equal width, or segments 1 and 4 slightly narrower than segments 2 and 3; upper surface of segment 1 as broad and flat as in *capensis*, not grooved mesially but very broadly shagreened; intercarinal spaces of cauda for the most part coarsely and thickly granular. Palps of ♀ and young with the brachium and manus unusually wide, the latter nearly as wide as in the adult ♂.

Measurements of ♀.—Length 91; length of carapace $9\frac{1}{2}$; length of brachium 7, width (at base of anterior basal tooth) $3\frac{1}{5}$; length of hand-back $4\frac{1}{4}$; width of hand $3\frac{1}{5}$; length of tail $52\frac{1}{2}$, length and width of I. segment $6\frac{2}{3}$, $6\frac{2}{3}$, of II. segment $7\frac{3}{4}$, $6\frac{2}{3}$, of V. segment 10, $5\frac{3}{4}$. (Length is always taken laterally from hind edge to the large anterior angular prominence of each tail segment.)

♂.—Length 93; length of brachium $6\frac{2}{3}$, width 3; length of hand-back 5; width of hand $3\frac{1}{2}$.

A number of ♂ and ♀ specimens (types, No. 1197) found between Packhuis Berg and Oorlogs Kloof, Clanwilliam and Calvinia Divs. (*Max Schlechter*). Also many other specimens from the western Divisions of the Colony. This is a very distinct species.

PARABUTHUS SCHLECHTERI, n. sp.

Colour yellow. Cauda with segments 1-4 10-carinate, the first three successively increasing in width, the fourth as wide as the third and always decidedly wider than the first; upper surface of segment 1 not quite so flat as in *capensis*, being distinctly although shallowly hollowed out from side to side in the posterior part, flat in the anterior part, not deeply grooved mesially; granulation between the keels of tail coarse but very sparse, denser in the middle below in segments 4 and 5; superior crests of segment 5 distinctly doubled in the middle.

Measurements.—Length ♀ 108, ♂ 95; length of carapace ♀ $11\frac{3}{4}$, ♂ $10\frac{1}{4}$; length of brachium ♀ $9\frac{1}{4}$, ♂ $9\frac{1}{4}$, width ♀ $3\frac{3}{4}$, ♂ $3\frac{1}{2}$; length of hand-back ♀ $4\frac{3}{4}$, ♂ $5\frac{2}{3}$; width of hand ♀ $3\frac{1}{4}$, ♂ $3\frac{3}{4}$; length of tail ♀ 62, ♂ 60, length and width of I. segment ♀ $7\frac{1}{3}$, 8, ♂ $7\frac{1}{3}$, $7\frac{2}{3}$, width of III. segment ♀ $8\frac{1}{3}$, ♂ $8\frac{1}{4}$.

A female (type, No. 2177) and a male from Little Bushmanland (between Henkries and Wolftoon, *Max Schlechter*). Also two others from Great Bushmanland. Very closely allied to *P. raudus* (Sim.) from which it appears to differ principally in not having the I. caudal segment deeply grooved above in the middle.

P. schlechteri and *neglectus*, nn. spp., *villosus* (Pet.), *granulatus* (Hempr. and Ehrbg.),* *laevifrons* (Sim.), and *brevimanus* (Thor.), have all been collected in Great Bushmanland by Mr. M. Schlechter, who often found several of these species living side by side in the same locality. They are all without the slightest doubt specifically distinct from one another.

PARABUTHUS TRANSVAALICUS, n. sp.

Closely related to the previous species. Cauda with the first three segments of equal width or slightly increasing in width; segments 1-4 10-carinate; segment 5 with the superior crests distinctly doubled in the middle, the inner crest composed of 3-4 strong, sharp, spiniform teeth; intercarinal spaces of cauda thickly granular; upper surface of segment 1 not flat, distinctly grooved mesially. Colour dark olive-green to nearly black, the tail tinged with dark brown, the legs and palps olive-green to dark brown, the fingers and the distal part of legs yellowish.

Measurements of ♀.—Length 92; length of carapace $9\frac{2}{3}$; length

* = *fulvipes* (Sim.).

of brachium $8\frac{1}{3}$, width $3\frac{1}{2}$; length of hand-back $4\frac{2}{3}$; width of hand $2\frac{3}{4}$; length of tail 53, length and width of I. segment 7, $7\frac{1}{2}$, of II. segment $7\frac{2}{3}$, $7\frac{2}{3}$, of III. segment $7\frac{3}{4}$, $7\frac{3}{4}$.

A couple of females (No. 3003) from the Transvaal, kindly presented by Dr. J. W. B. Gunning of the Pretoria Museum. In the latter Museum also are several other specimens, for the loan of which I am indebted to Dr. Gunning.

HADOGENES GUNNINGI, n. sp.

♀.—Carapace very shallowly and widely emarginate in front. Last abdominal tergite very short, more or less rounded behind and almost semicircular in outline, much broader than long. Tail $3\frac{3}{4}$ times as long as the carapace, which is as long as the first and three-fourths of the second segment; first segment higher behind than broad, the upper crests smooth; terminal tooth of superior crests enlarged but not spiniform in segment 2, less enlarged in segment 3; vesicular segment distinctly compressed, not turgid, only slightly wider than the hind end of the fifth segment, its upper side slightly convex. Upper surface of humerus of palp with no strong ridge just behind the anterior border; length of humerus along upper hind margin $2\frac{1}{2}$ – $2\frac{2}{3}$ times the width of the upper surface. Pectines with 13–16 teeth. Colour dark brown mingled with olive-green, vesicle paler brown.

Loc.—An ad. ♀* from Pretoria (type, No. 4,041) collected by Dr. J. W. B. Gunning, Director of the Staats Museum at Pretoria, in which are several other specimens. I am much indebted to Dr. Gunning for the type and for the loan of his other specimens.

Measurements.—Total length 106; length of carapace $13\frac{1}{4}$; length of last abdominal tergite $8\frac{1}{5}$, width 12; length of tail 50; length of I. segment $6\frac{3}{4}$, width behind $2\frac{3}{4}$, height behind $3\frac{1}{4}$; length of II. segment $8\frac{1}{4}$, width of vesicle $2\frac{2}{3}$, height 3; length of humerus $12\frac{2}{3}$, width of upper surface $4\frac{1}{2}$, length of anterior surface (measured along middle from the large tooth near base) $8\frac{1}{2}$, width $3\frac{1}{2}$; length of hand 25, width 8, length of hand-back 14.

Very near *troglydytes* (Pet.) from Rhodesia but smaller, with relatively broader humerus and narrower vesicle.

* The adults in the genus *Hadogenes* are readily distinguishable by the presence of a large lobe at the base of the fingers of the palps. In immature specimens this lobe is obsolete.

HADOGENES WHITEI, n. sp.

♀.—Carapace deeply emarginate in the middle in front. Last abdominal tergite as in *gunningi*. Tail nearly $4\frac{1}{4}$ times as long as the carapace, which is as long as the first and three-fifths of the second segment; first segment stout, scarcely higher than wide behind, its upper crests smooth, with a few small, weak granules posteriorly; terminal tooth of superior crests enlarged and spiniform in segment 2, less enlarged and not spiniform in segment 3, not at all enlarged in segment 4; vesicle straight above, compressed.

♂.—Tail seven times as long as the carapace, which is only a little longer than the first caudal segment; the latter much higher behind than wide; vesicular segment strongly concave above; superior crests in segment 2 with the terminal tooth strongly spiniform, very large and curved forwards. Last abdominal tergite longer, but still considerably wider than long.

Measurements.—Length ♀ 101, ♂ 124; length of carapace ♀ $12\frac{2}{3}$, ♂ $11\frac{2}{3}$; length of last abdominal tergite ♀ 8, ♂ $8\frac{1}{2}$, width ♀ $11\frac{1}{2}$, ♂ $9\frac{1}{2}$; length of tail ♀ $53\frac{1}{2}$, ♂ $80\frac{1}{2}$; length of I. segment ♀ $6\frac{3}{4}$, ♂ $10\frac{3}{8}$, width behind ♀ 3, ♂ $2\frac{5}{16}$, height behind ♀ $3\frac{1}{16}$, ♂ $3\frac{1}{2}$; length of hand ♀ $24\frac{1}{4}$, ♂ $21\frac{1}{2}$, width ♀ $8\frac{3}{8}$, ♂ 7, length of hand-back ♀ $13\frac{3}{4}$, ♂ 12.

Loc.—An ad. ♀ and ♂ from Brakkloof, near Grahamstown, Albany Div. (type ♀, No. 1736), kindly presented by Dr. Schönland, of the Albany Museum, and named in honour of Mrs. George White, who discovered the specimens.

This species is dark olive-green in colour with dark brown hands, and is closely allied to *trichiurus* (Gerv.), from which it differs in having the tail much wider, the palps much stouter and thicker, and the last abdominal tergite shorter.

HADOGENES MINOR, n. sp.

♀.—Carapace broadly and moderately deeply emarginate in front. Last abdominal tergite broader than long, somewhat rounded behind but not quite semicircular in outline, the broad anterior border without the pair of small pits at its hind margin near the middle. Tail almost four times as long as the carapace, which is equal in length to the first and four-fifths of the second segment; first segment depressed, considerably wider than high, its length scarcely twice its width and nearly $2\frac{2}{3}$ times its height, its sides dilated and slightly arcuate outwards in the middle, converging at the anterior and posterior ends of the segment, the superior crests granular and

distinct only in anterior part of the segment; superior crests of segments 2 and 3 with the terminal tooth scarcely or only slightly enlarged; vesicular segment compressed, almost straight above. Pectines with 11–12 teeth in the ♀ (14–15 in young ♂). Colour dark olive-greenish brown to dark-green, the vesicle yellow, the legs brown.

Measurements.—Length 73; length of carapace 9, depth of emargination $\frac{3}{4}$; length of last abdominal tergite $6\frac{1}{4}$, width 7; length of tail $35\frac{1}{2}$; length of I. segment $4\frac{1}{4}$, width (in middle) $2\frac{3}{4}$, height $1\frac{3}{4}$; length of hand 16, width 6, length of hand-back 9; length of anterior face of humerus 6, width $1\frac{2}{3}$.

Loc.—An ad. ♀ (type, No. 1207) and several young from the Onder Bokkeveld, Bokkeveld Mountains, Calvinia Div. (*Max Schlechter*). Also another ad. ♀ from Langkuil, near the Doorn River, Clanwilliam Div. (*C. L. Leipoldt*). This is a small species, closely related to *tenuirurus* (Thor.).

Var. cedri nov.—Differs from the typical *minor* in the much larger size and in having the sides of the I. caudal segment parallel, not bulging outwards in the middle; length of I. caudal segment $2\frac{1}{4}$ times its width and $2\frac{2}{3}$ times its height. Total length 105; length of carapace $12\frac{1}{2}$; length of tail 51, of I. segment $6\frac{1}{2}$, width of I. segment 3, height $2\frac{1}{2}$.

An ad. ♀ (No. 2217) from the Sneeuwkop Mountain (3,000 feet.), Cedarberg Range, Clanwilliam Div. (*C. L. Leipoldt* and *R. Pattison*).

HADOGENES BICOLOR, n. sp.

♀.—Carapace and last abdominal tergite as in *minor*. Tail short, about $3\frac{1}{5}$ – $3\frac{1}{4}$ times as long as the carapace, which is equal to or even slightly exceeds the first two caudal segments in length; first segment depressed, considerably wider than high, its length more than $1\frac{1}{2}$ but less than $1\frac{2}{3}$ times its width, which is greatest in the middle, the sides arcuate outwards; superior crests in segment 1 smooth, very weakly and sparsely granular in segments 2 and 3, with the terminal tooth small; vesicle straight above. Pectines with 13–16 teeth. Colour dark olive-green, the palps dark brown with green crests, the legs lighter brown, the vesicle yellowish brown.

Measurements.—Length 99; length of carapace 13; length of last abdominal tergite $8\frac{1}{3}$, width $10\frac{2}{3}$; length of tail $43\frac{1}{3}$; length of I. segment $5\frac{3}{4}$, width in middle $3\frac{1}{2}$, height $2\frac{1}{4}$; length of hand 27, width 8, length of hand-back 15; length of anterior face of humerus $9\frac{3}{4}$, width 3.

Loc.—Several adult and young specimens (types, No. 4062), captured about twenty miles east of Pietersburg, Zoutpansberg Distr., Transvaal (*Rev. J. W. Daneel*).

Very like *minor* but with relatively much shorter tail and thicker palps.

XIII.—*Description of Twelve New Species of the Genus Mutilla*
(Order Hymenoptera) in the South African Museum.—By L.
PÉRINGUEY, Assistant Director.

SINCE the publication of my second paper on South African *Mutillidæ* the Museum has received twelve new species, the description of which forms the subject of this paper.

Through the courtesy of Mons. Ed. André I have been able to examine two of his types of South African *Mutillæ*, i.e., *M. bassutorum* and *M. penicillata*, described by him. *M. bassutorum* resembles very much *M. pandora*, Pér., but is different, and *M. penicillata* is indubitably identical with *M. callisto*, Pér.; the former name has therefore priority.

I have received from Mashunaland *Mutilla coryphasia* ♂, Pér., still *in coitû* with *M. mephitis* ♀, Sm. This latter species occurs also in Senegal, and I have received an example from Dakar. It is thus probable that the females of *M. atropos* and *M. acidalia* will be like *M. mephitis* in build and markings, as it proves to be for *M. exaltata*, *M. cloantha*, and *M. hecuba*, which said species are closely allied in both sexes to *M. viduata*, Pall., of Europe and Algeria.

In the plate illustrating my two previous papers on South African *Mutillidæ* the third cubital cell of the fore wing is partially closed in *M. erynnis* ♂ (fig. 7); such is not the case; it is entirely open, and the first cubital should be more rectangular and cover the same area as the second; in *M. autinoë*, fig. 4, the second transversal nervure is not indicated, and the second discoidal should be more in the shape of a parallelogram viewed sideways and not in the shape of an arc of circle; there are other inaccuracies in the neururation of some of the other figures, such as the absence of the second transverse cubital nervure, which should close the second cubital cell in *M. purpurata*,

(fig. 14), the first cubital cell of which should be much more elongate at the expense of the first discoidal, &c.

In my second paper in Part 2 of Vol. I. of the ANNALS an error of enumeration in the text has crept in, and should be corrected as follows:—

Page 357, *Mutilla celimene*, is not figured.

Page 361, *Mutilla æthra*, read Plate VIII., fig. 24.

Page 362, *Mutilla thais*, read Plate VIII., fig. 26.

Page 363, *Mutilla deianira*, read Plate VIII., fig. 23.

Page 364, *Mutilla dunbrodia*, read Plate VIII., fig. 18.

At the end of this paper an explanation of Plate VIII., omitted in the previous paper, is given in full.

MUTILLA MATUTA.

♀. Head and thorax red, mandibles, antennæ, and legs reddish ferruginous, abdomen black with a broad central flavous patch in the centre of the basal joint; the second has a basal band and the third is totally covered by a band of the same colour; head sub-quadrate, but a little rounded laterally behind, eyes set forward, large, oblong; the surface is covered with round, scrobiculate foveæ and is nearly glabrous but for a few very long whitish setæ; antennal tubercles piceous, scape nearly glabrous and piceous red, first joint of flagellum nearly as long as the second, which has the shape of a truncate cone; mandibles sharp at tip, simple; throat quadrate, very nearly as broad as long, truncate at apex and at the posterior declivity, with the sides not serrate, covered with deep and broad foveæ with no reticulated intervals, apical part of the declivity sub-carinate, suture of the pro- and mesothorax distinct; it is set with a few very long greyish and white hairs; abdomen sessile, basal joint truncate and fitting exactly against the base of the second which becomes amplified laterally at a certain distance from the base; both these segments are finely but deeply punctured, and the punctures are round, the basal segment has no distinct ventral carina, and the median flavous patch of hairs extends a little beyond the suture; the basal band of the second segment is sensibly broader at middle, and the apical segment is depressed and entirely covered with very closely set minute punctures which give it the appearance of being very finely granulose; posterior tibiæ thickened past the middle, and with the outer series of spines obliterated; spurs white. Length 7 mm.

Hab. German South-West Africa (Salem). Dr. G. Laske.

I know of no South African ally of this species.

MUTILLA ENIPPE.

♀. Head and thorax deep red, antennæ, legs, and abdomen black, the latter with the base of the first and second segments, the whole of the third and the margin of the apical one banded with a slightly flavescient pubescence, second segment with one central median ovate spot and a sub-lateral one on each side of it; head deeply foveolato-scrobiculate, clothed with a silvery somewhat sparse pubescence, eyes very large and bulging, extending nearly to the posterior angles which are rounded; scape of antennæ piceous, first joint of flagellum thick, second a little more than twice as long as the first, and only a little longer than the third; mandibles sharp at tip, simple; thorax parallel, long, narrow, truncate at apex, and with the posterior declivity nearly vertical, the suture of the mesothorax and the scutellary region is very distinct; there is a short, compressed scutellary tubercle, the outer sides are crenulate, and the upper surface is deeply and closely foveolato-reticulate, while the intervals at the top of the declivity are almost tuberculate; it is clothed with black, short hairs turning to grey on the sides; abdomen sub-petiolate, short, nodose at apex, and with the ventral carina briefly tridentate, second segment covered with closely set and deep, elongate punctures without sinuate walls, the lateral sub-flavescient patches are nearly equi-distant from the outer margin and from the central one which is a little larger, and the basal band is a little thicker at middle; the apical segment is covered with arcuate, fine and closely set striæ, the extreme apex itself being smooth; legs black, clothed with white hairs, tibiæ with a double series of spines, spurs white. Length $8\frac{1}{2}$ mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

This species is almost identical with *M. tettensis* in general facies, although smaller; the white spots on the second joint of the abdomen are similarly arranged, but there is a basal band on this segment which is wanting in *M. tettensis*, and the band on the third segment is not interrupted as in the last-named species.

MUTILLA NORTIA.

♀. Black, with thorax red; basal segment of abdomen with a small lateral patch; the other abdominal segments, except the apical one, having a basal whitish, sub-flavescient transverse band; head as broad as long, and nearly as broad as the base of the prothorax, sub-quadrate, eyes ovate, bulging, equi-distant from apex and base; it is covered with deep, closely set foveæ, and clothed with a

short greyish pubescence; the antennæ are piceous or piceous red, the joints of the flagellum are thick, the second joint is as long as the third and fourth together, the mandibles are rufescent, moderately short and simple inwardly; thorax nearly straight at apex, slightly amplified diagonally laterally from the apical angle to two-fifths of the length, and distinctly tuberculate there, attenuate diagonally from there to the posterior declivity which is nearly vertical, and where it is narrower than the apical part by one-fifth; the apical and lateral sides are crenulate, and the upper part covered with deep, round foveæ with narrow walls; the foveæ are still broader in the declivity; abdomen sessile ovate, first segment vertical, dentate on each side of the base, covered, like the second segment, with deep, elongate punctures, the walls of which in the latter are raised and somewhat strigillate; the other segments are deeply punctured, and fringed with a whitish flavescent band narrower than on the second segment, and as distinct underneath as on the upper part; the whole of the last segment is closely and finely striate from apex to base; ventral carina of the first segment truncate at base, angular behind, and sloping towards the apex; legs black with the tarsi sub-rufescent, clothed with white hairs, tibiæ with a double row of spines, spurs fuscous brown. Length $10\frac{1}{2}$ mm.

Hab. Southern Rhodesia (Matoppo range). R. Pillans.

Not unlike *M. cassiope* in general facies.

MUTILLA LAVERNA.

♀. Black, with the upper part of the thorax dark ferruginous red, first abdominal segment nearly entirely covered with a rich orange pubescent patch, second segment with a broadly triangular basal patch the apex of which reaches the central part, third segment entirely clothed with the same pubescence; head small, scrobiculate, eyes large, ovate, bulging, posterior angles rounded; it is covered with a greyish pubescence, mixed with a few black bristles; the antennæ are black with the scape piceous and thickly clothed with a silvery pubescence, second joint of the flagellum not quite as long as the two following, first joint small; jaws sharp, slightly bifid inwardly at tip; thorax parallel, but a little emarginate laterally towards the middle, nearly straight in the anterior part, broader than the head, clothed with dark hairs on the upper side, and grey hairs laterally and beneath, vertically declivous behind and covered with broad foveæ with intervals raised and forming wavy longitudinal ridges; the lateral margins are rugose, but not crenulate;

abdomen sessile, elongato-ovate, basal segment truncate, fitting against the base of the second, and entirely covered with the orange-yellow pubescence, the ventral carina is sharp, short, and truncate at each end; second segment covered with raised, wavy lines, densely clothed, like the posterior ones, with a thick black pubescence, and having at the base a triangular orange patch extending from each angle to the middle of the dorsal part; the apical segment is depressed, closely and distinctly striate longitudinally for two-thirds of the length, with the apical third finely aciculate; legs black, clothed with silvery hairs; tibiae with a double series of spines, spurs black. Length 12 mm.

Hab. Mossamedes. Dr. G. Laske.

Allied to *M. tecmessa*, Pér.; the shape of the thorax is nearly similar, but a little narrower proportionately, and the head is narrower instead of being broader than the thorax; the abdomen and also the vestiture are similar, but in *M. laverna* the basal triangular patch ascends much further, and the band on the third segment is not interrupted.

MUTILLA CLELIA.

♀. Black, with a totally ferruginous red thorax, first basal segment of abdomen with a small lateral white patch on each side, base of second segment and the whole of the third clothed with a wide band interrupted in the middle; head large but only a little wider than the thorax, a little rounded laterally behind and sinuate at the base, eyes large, set forward, ovate; it is very deeply scrobiculate, with the intervals reticulate and clothed with dark and white hairs and also a slight silvery pubescence; antennae piceous, first joint of the flagellum small, second one as long as the two following put together; mandibles strong, sharp at tip and with a conspicuous median tooth inwardly; thorax sub-parallel, nearly straight at apex, convex in the anterior part and gradually sloping from there to the posterior declivity which is vertical, very slightly attenuate laterally from apex to base, but marginate at about one-third of the length, crenulate, slightly bi-tuberculate at about the median part; it is covered with deep, reticulate foveae and clothed with greyish and black hairs; abdomen sessile, clothed with a dense, black pubescence; basal joint truncate, fitting exactly against the basal part of the second segment, covered with elongate punctures, and having on each side a small basal white patch not reaching the outer margin, and each covering about one-third of the surface; ventral carina short, truncate at each end; second segment covered with elongate punc-

tures, the intervals of which are raised, especially towards the outer sides; the basal white band is very narrow and distinctly interrupted in the middle, and it has beneath three carinæ ending in a sharp tubercle; the band on the third segment is as broadly interrupted as the basal one of the second segment, and the apical one is depressed and nearly smooth at apex; legs black, clothed with silvery white bristles, spurs white. Length 13 mm.

Allied to *M. astarte*, *M. pythia*, and *M. bi-lunata*. From notes taken when comparing some of my examples with Smith's types in the British Museum, *M. bi-lunata* and *M. pythia*, and possibly *M. comparata*, may prove to be the same species; but *M. astarte* has also three longitudinal carinæ ending in a small tooth on the ventral part of the second abdominal segment, and *M. clelia* might prove to be a small varietal form of the latter.

Hab. Southern Rhodesia (Salisbury). G. A. K. Marshall.

MUTILLA CYLLENE.

♀. Head and prothorax pale brick-red legs and antennæ rufescent, abdomen black with the exception of the first segment which is brick-red; base of the first four abdominal segments banded with sub-flavescent white, second segment with a basal, median patch; head deeply pitted, covered with a silky slightly flavescent pubescence and pale brownish hairs, eyes large, ovate, very bulging, posterior angles of the head slightly rounded; second joint of the flagellum only a little longer than the one following, mandibles sharp at tip, simple; prothorax hardly broader at apex than the head, truncate in front, gradually attenuate laterally from apex to base where it is about one-fourth narrower, a little sinuate laterally and with a sharp projecting angle at the beginning of the sinuation, posterior declivity very sloping and having at tip a scutellary tubercle; it is covered with deep reticulate foveæ, clothed with long, greyish and white hairs, and the sides of the declivity are marginate and sub-serrulate; abdomen pedunculate, first segment not very long, nodose at base and having a three dentate ventral carina; it is deeply punctate and has a white, slightly flavescent, apical transverse band; the second segment is covered with wavy longitudinal raised lines, enclosing elongate, narrow foveæ; it bears a small comma-shape, whitish patch in the centre of the base, and an apical triangular band ascending in the middle to about one-quarter of its length, third and fourth segments entirely banded with flavescent white, apical segment covered with very closely set longitudinal striæ, and

with some of the intervals slightly raised, extreme apical part aciculate; legs clothed with sub-flavescent hairs, tibiae with a double series of spines, spurs fuscous. Length 7-8 mm.

Hab. Cape Colony (Hex River). L. Péringuey.

A close ally of *M. thaïs*, Pér.; the shape of the thorax and abdomen is nearly similar, but the former is much more broadly foveate, and the second segment of abdomen is not covered with closely set, round punctures as in *M. thaïs*.

MUTILLA MATOPOA.

♀. Black, with the thorax red; first segment of abdomen with a sub-quadrate patch on each side of the apical part, a small, triangular one at the apex of the second segment, and a transverse band broadly interrupted in the middle on the third one; head elongate, sub-parallel laterally behind the eyes which are ovate and situated forward, sub-truncate behind, broader than the anterior part of the prothorax, broadly foveato-reticulate, clothed with few black hairs and a sub-decumbent silvery white pubescence, jaws trifid inwardly; antennae black, second joint of flagellum as long as the two following; thorax a little sloping on each side at apex, attenuate laterally towards the declivous part where it is one-third narrower than at apex, the sides are slightly bi-sinuate and crenulate, and the declivity very abrupt; it is very roughly reticulate and covered with dark and greyish hairs; abdomen sessile, elongato-ovate, first segment nearly vertical, dented on each side at base, plane on the upper side, and fitting against the second segment which is not broader at apex than the base of the first; it is finely and closely punctured, and the silvery patches, which are sub-lateral, impinge on the apical margin of the second segment; this latter is clothed like the other segments with a dense black pubescence, and is covered with moderately elongate, not very deep punctures, intermixed with a few elongate foveæ, and has in the centre of the apical margin a small, sub-triangular silvery patch; on the third segment the band is interrupted in the centre for about one-third of the length; the other segments are closely punctured, including the apical one which is as closely and distinctly punctured as the preceding one for two-thirds of the length, but the apical part is extremely finely aciculate, nearly smooth; ventral carina of the first segment short, truncate at apex; legs black, clothed with silvery white hairs, tibiae with two series of spines, spurs white. Length 20 mm.

Hab. Southern Rhodesia (Matopo Hills). R. Pillans.

A very distinct species without any South African ally known to me.

MUTILLA ATOSSA.

♂. Black, shining, tegulae dark ferruginous, abdomen with a transverse narrow basal band interrupted in the centre, and a broad whitish band on the third segment; head sub-quadrate but with the posterior angles slightly rounded, and the eyes large and very slightly emarginate; it is closely foveolate and covered with greyish hairs; jaws moderately long, compressed and bifid at tip, and without any basal tooth beneath; antennae not very thick, scape and the two first segments of the flagellum piceous red, first joint of flagellum small, second joint as thick as the third, but one-half shorter; thorax covered with closely set foveae, and clothed with greyish white hairs denser on the scutellum; prothorax rounded laterally, mesothorax with two median longitudinal grooves and a fine raised line in the centre, scutellum moderately raised, a little narrowed laterally, behind; metathorax short, very abruptly declivous, not carinate laterally and having the posterior angles rounded; abdomen sub-sessile; the first joint has a short peduncle; and the basal part is as broad as the apical one of the second joint; first and second joints deeply foveolato-punctate and clothed with greyish hairs; the other joints are finely punctured and clothed with black hairs, and the basal part of the second segment has a very narrow silvery white band, broadly interrupted in the middle, while the third segment is entirely covered by a continuous band; wings fuscous with a violaceous tinge, stigma very minute, opaque, radial cell not truncate, three cubital cells and two recurrent nervures; legs non-spinose, spurs black or piceous; ventral carina of first segment laminate and abruptly truncate at both ends. Length $11\frac{1}{2}$ mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

Allied to *M. cinchreis*, but the joints of the antennae are not sub-aculeate inwardly at tip, the second joint of the flagellum is shorter in proportion, and the punctures on the body are much deeper and more broadly foveate.

MUTILLA EUNYCE.

♂. Black, with the prothorax and the scutellum covered with dense, slightly flavescent hairs, basal margin of the second

abdominal segments, and the whole surface of the third with a transverse, slightly flavescent whitish band extending also on the ventral part; head rounded laterally behind the eyes which are bulging much and are not emarginate; it is deeply and closely punctured, and covered with long greyish and black hairs, the former of which predominate on the vertex; mandibles somewhat short, not much dilated at apex where they are trifid, and with a moderately developed median external tooth beneath; thorax foveolato-punctate, covered with dense black hairs laterally and beneath, but replaced on the prothorax, the tegulæ, the scutellum and the metathorax by flavescent ones, very dense on the prothorax and scutellum; mesothorax with two median longitudinal impressed lines; scutellum not much raised, rounded laterally, and slightly emarginate at middle behind; metathorax foveolate, not carinate laterally, and with the posterior angles rounded; abdomen sub-petiolate, basal segment not very long, nodose, second segment sub-orbicular; they are both closely and deeply but not broadly punctured, covered with dense erect greyish white hairs; the base of the first segment cannot be said to have a transverse band, although there is a little pubescence, but the second segment is fringed with a narrow, white, slightly flavescent band, and the whole of the third segment is covered with a similar band; the other segments are clothed with black hairs; antennæ thick, first joint of flagellum small, short, second joint one-third shorter than the following one and not much wider than the first; wings fuscous, violaceous, stigma hardly discernible, opaque, radial cell truncate at tip, two cubital cells and one recurrent nervure; tibiæ non-spinose, spurs black; ventral carina of first segment with a sharp tooth in the middle. Length 10 mm.

Hab. Cape Colony (Uitenhage). Rev. J. A. O'Neil.

Allied in general facies to *M. appias* and *M. nyctimene*, but in these species the third cubital cell of the wings is closed, and the metathorax is red in the former.

MUTILLA CEBRENE.

♂. Black, with the prothorax, mesothorax, and scutellum dark red, tegulæ piceous, wings steel-blue; head quadrate, scrobiculate, covered with dense ashy-grey hairs, forming a thick bunch in front of the insertion of the antennæ, jaws long, compressed and enlarged at tip, slightly bifid there, and having beneath a greatly developed

sub-vertical tooth near the median part; eyes large, emarginate; antennæ moderately long, not very thick; second joint of the funicle a little longer than the third; thorax foveolate, covered with moderately long hairs which are brownish on the upper side and slightly silvery on the mesosternum; mesothorax with longitudinal grooves and a median raised line; scutellum produced in a very distinct triangular tubercle sharp at tip and beset with fulvous hairs; metathorax sloping, more broadly foveate than the rest of the thorax, sharply carinate laterally and having another sharp carina running parallel with the carinate outer margin and at a short distance from it for a little less than half the length; median part with two slightly raised, wavy lines ending in a very small, inconspicuous tubercle at about the middle; abdomen sub-sessile, covered with somewhat brownish hairs turning to ashy-grey beneath; first segment sharply dentate on each side of the base and also laterally, but in a less degree, at a short distance from the base, and diagonally amplified from there to the base which is a little narrower than the apex of the second segment which is amplified laterally, and closely but not deeply punctured like the other segments, but has a median space quite smooth and very shining; ventral carina of basal segment not very developed, slanting at apex and emarginate; spurs of tarsi white; tibiæ non-spinose; wings with three cubital cells; stigma elongate, celluliform, radial cell not truncate. Length 22 mm.

Hab. Southern Rhodesia (Salisbury). G. A. K. Marshall.

The facies is not unlike that of *M. acheron*, and the shape and sculpture of the mesothorax and scutellum is similar.

MUTILLA MENALIPPA.

♂. Black, with the first and second segments of abdomen red, the two first segments with a narrow, basal, flavescent band, third segment entirely flavescent, tegulæ reddish brown, wings fuscous; head transverse, parallel laterally, foveolate and covered with black hairs turning to flavous behind and laterally as well as on the basal joint of antennæ and in front of them, jaws moderately long, trifid on each side at tip and having beneath a dentiform process which is the prolongation of the inferior margin abruptly truncate at middle; eyes large, emarginate; antennæ thick, second joint of the funicle half the length of the third; thorax foveolato-reticulate; it is covered with dense yellowish hairs, those on the mesothorax are

black, but on the post-scutellary region, and also on the metathorax these hairs are yellowish; the mesothorax has two median, ill-defined longitudinal grooves, the scutellum is raised, rounded, slightly emarginate at tip and fringed with long, dense flavescent hairs; the metathorax is very slanting, broadly foveate, rounded laterally in the posterior angles, and has in the centre an ill-defined groove rounded at apex, and covered with a short, decumbent flavescent pubescence; abdomen sub-petiolate, closely and moderately deeply punctured; first segment short, covered with sub-flavescent hairs which become denser and more yellow at apex where they form a narrow band, second abdominal segment not wider at apex than the base of the first, ovate, fringed with a narrow band of yellowish hairs, and with the apical and lateral part having the appearance of being infuscate owing to the denser black hairs, the third segment is entirely covered on the upper side with a flavescent band, and the other segments are covered with black hairs; the legs are black and non-spinose, the spurs are white; the tegulae are deeply punctured, the wings are fuscous with the nervules violaceous; the stigma is opaque and small, three cubital cells and two recurrent nervules, radial cell not truncate; carina of the first abdominal segment long, aculeate at apex, and slightly emarginate in the middle. Length 14 mm.

Hab. Natal (Durban). C. N. Barker.

Belongs to the same group as *Mutilla cloantha*, *exaltata*, *tyro*, and *hecuba*. It differs from *M. tyro* in having the prothorax covered with dense yellow hairs, and the apical part of the second abdominal segment also narrowly fringed with a yellowish pubescence, while *M. hecuba*, which has a similar yellow pubescence on prothorax and scutellum, has the third and fourth abdominal segments banded with flavescent white pubescence.

MUTILLA CALAÏS.

♂. Black, shining; prothorax, mesothorax and scutellum red, apical margin of the first and second segments, and the whole of the third one with a transverse silvery white band; head transverse with the posterior angles slightly rounded, the eyes are not emarginate; it is covered with deep, round foveolate punctures, and clothed with dense black hairs; the mandibles are somewhat short, not enlarged at tip, quadri-dentate inwardly, and not toothed beneath; antennae thick, second joint of the flagellum one-third shorter than

the third, but of equal width, scape very roughly punctured; thorax truncate in front, not long; deeply foveolate, mesothorax without longitudinal raised line or groove, scutellum on a plane with the mesothorax, transverse with the posterior angles rounded, a little emarginate and slightly declivous at apex; tegulæ red, deeply punctured; wings fuscous, anterior ones slightly bluish at tip and a little less deeply infusate at base, stigma opaque, very small, radial cell not truncate nor very elongate; three cubital cells and two recurrent nervures; abdomen petiolate, first and second segments covered with deep, elongate, foveolate punctures, the others closely aciculate; the first segment is long, very slender at base, and gradually swollen, and the remainder of the abdomen is quite ovate, the margins of the first and second segments have a silvery white pubescent band, and the third is covered with a similar band which is not, however, broader than the marginal one of the second; ventral carina of the first segment nearly as long as the segment itself, little raised, and not truncate at apex; legs black; tibiæ not spinose, spurs black. Length 12 mm.

Hab. Natal (Durban). C. N. Barker.

Its nearest ally among South African *Mutilla* with the basal segment long and nodose at apex, is *M. capicola*, but it differs from it by the less deep and narrower foveolate punctures on the two basal segments of the abdomen, the first of which is also a little more slender, and there is a transverse band on the third segment which is absent in *M. capicola*.

NOTE.

The names *euterpe*, p. 358, and *clytemnestra*, p. 360, being preoccupied, must be changed into *phocia* and *dasya* respectively.

Instead of *Mutilla cloantha*, figs. 18, 20, p. 353, read figs. 19, 21; and p. 367, line 25, read *artemisïa* instead of *creüsa*.

EXPLANATION OF PLATE VIII.

ILLUSTRATING THE THREE PAPERS ON *MUTILLIDÆ* PUBLISHED
IN THIS VOLUME.

FIG.		PAGE
1, 2.	<i>Mutilla themis</i> , ♀, ♂	68
3.	„ <i>ducetis</i> , ♀	363
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5, 5a.	„ <i>helle</i> , ♀	58
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7, 7a.	„ <i>erynnis</i> , ♂	92
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10.	„ <i>euterpe</i> , ♀ (= <i>phocia</i>)	358
11, 13.	„ <i>persephone</i> , ♂, ♀	69, 373
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XIV.—*On Two New Species of Dicynodonts.*—By R. BROOM,
M.D., B.Sc.

DICYNODON LATIFRONS, n. sp. (Plate X., figs. 1, 2, 3).

THE type of this new species of *Dicynodon* is an imperfect and crushed skull discovered by the Rev. D. D. Fraser at Burghersdorp. Till the skull found its present resting-place in the collection of the Eastern Province Naturalists' Society, it seems to have been indifferently cared for, and a large fragment, representing the right side of the beak, which was originally present in the specimen, has been lost. In its present condition, with the exception of the missing half of the beak, the skull is moderately complete in front of the temporal region, but has been slightly obliquely distorted. A considerable portion of the parietal crest is missing; while the occiput, with the right squamosal and quadrate, has been crushed in upon the under side of the front part of the skull.

In a number of its features the form bears considerable resemblance to *Dicynodon simocephalus*, Weith., and also shows some affinity, though much more remote, with *Dicynodon pardiceps*, Ow. The very imperfect condition of the type specimen of *Dicynodon simocephalus* renders a comparison with it a matter of some difficulty and considerable uncertainty, but the great breadth of the maxillaries in *D. simocephalus* is so unlike the condition in the present type where the maxillary breadth scarcely exceeds the breadth across the frontals as to leave comparatively little doubt but that the two species are distinct.

In both *D. pardiceps* and *D. simocephalus* the orbits are directed somewhat frontally, but in the present form they are directed almost perfectly laterally.

The frontal region is broad and moderately flat. The frontal

bones are irregularly quadrangular in shape, and form the upper margin of the orbits to the extent of about 45 mm. In front where the frontal meets the prefrontal and the nasal the breadth is 47 mm., while behind where it joins the post-orbital the breadth is 55 mm.

The post-orbital on the left side is moderately complete, though slightly crushed. Where it forms the posterior border of the orbit it is fairly massive and averages 23 mm. in breadth. On its posterior edge is developed a well-marked ridge which passes almost directly upwards, inwards, and backwards, forming the anterior border of the temporal fossa, and then curving mainly upwards and backwards forming the side of the parietal crest. As it appears in the present condition the anterior part of the parietal crest rises abruptly from the frontal plane and forms with it an angle of about 120° . As that part of the post-orbital bone which is preserved is scarcely appreciably injured, and as the lower portion which forms the post-orbital arch is somewhat displaced forwards, it necessarily follows that the parietal crest must originally have formed a less obtuse angle with the frontal than in the present condition.

The parietal is partly missing, and the exact development of the anterior part has not been displayed.

In front, the frontals meet the prefrontals and the enormously developed nasals. The prefrontals are irregularly triangular in shape. The outer side forms the border of the orbit for a distance of about 35 mm. The articulation with the frontal measures about 28 mm., and that with the nasal about 37 mm.; while the articulation with the lachrymal, not counting that portion within the orbit, measures about 17 mm.

The lachrymal is moderately large and meets the prefrontal, the nasal, the maxillary, and the malar bones. It extends forwards from the margin of the orbit for a distance of 35 mm.

The nasals are of large size, and together form as large a roofing as is formed by the frontals and prefrontals together. Down the middle line where the bones of the two sides meet there is formed a well-marked ridge which rises to the height of about 7 mm. above the arch of the nasals. The nasals form a gentle curve in an antero-posterior direction, while they form laterally a very regular arch interrupted only by the median ridge. In the fossil the anterior part of the nasals is missing, but from the position of the back of the nostril which is preserved it is probable that but little of the left nasal is lost. The length of the nasals would probably be about 95 mm.; while the greatest breadth of each nasal measuring round the arch is 60 mm., and the transverse breadth of the two nasals

together, 85 mm. The nasal forms the upper, posterior and to a slight extent inferior borders of the nostril.

The maxillary bone is moderately complete on the left side, but on the right side only the posterior half remains. That on the right side, however, though imperfect is scarcely at all crushed. The most striking characteristic of the maxillary is the presence on the outer side of a well-developed ridge. This is directed outwards and slightly downwards from the lower border of the outer surface. The edge is rounded and presents a rough surface with a number of transverse grooves. It seems probable that this ridge may have supported a heavy upper lip, but it could hardly have been sheathed in horn. There is a very feebly developed ridge found in a similar situation in some of the more normal *Dicynodonts*. In the type of *Oudenodon prognathus*, Owen, there is a fairly well-marked ridge present, but not quite in the same situation. The tusk is directed more forwards than downwards, and lies almost directly in a line with the malar arch. It is more feebly developed than in the majority of species of *Dicynodon*, and gives the maxilla more the appearance of that found in *Gordonia*. At the anterior part where the tusk is free it measures 13 mm. in greatest diameter. The root of the tusk as displayed at the fracture on the right side measures from 18–20 mm. Judging from the preserved parts the portion of the palate between the maxillaries must have been narrow, and it is probable that the beak was slender. The width of the upper jaw at the posterior part of the lateral ridge is 104 mm. It will thus be seen that the greatest breadth of the jaw is but little greater than the least measurement across the frontals, and less than the maximum frontal breadth—a condition in very marked contrast to that found in *Dicynodon simocephalus*, Weit.

The premaxillary is completely lost on the right side, but sufficient remains on the left side to give a fair idea of the position of the point of the beak.

The malar bone is fairly well preserved on the left side but somewhat crushed. The portion forming the arch is long, slender, and straight. It is hollowed on the outer side apparently for the articulation of the post-orbital and the squamosal.

The greater portion of the zygomatic part of the squamosal is preserved though much crushed. The descending portion of the squamosal, though its outer edge is much broken, is moderately well shown. In its relations to the occiput it quite agrees with the condition in other species of *Dicynodon*.

About half the quadrate is preserved, though the articular surface

is gone. Its transverse width is 34 mm. and its antero-posterior measurement about 20 mm.

The occiput presents no unusual features. The condyle is rather large, and the basi-occipital portion is demarcated from the ex-occipital portions by distinct shallow depressions or grooves. If these grooves indicate the original lines of suture, the basi-occipital portion is about twice as large as either of the others. The transverse width of the condyle is 44 mm., and the depth in the median line 33 mm. Above the condyle on either side of the foramen magnum is a very distinct and well-developed tubercle with a small ridge running downwards and outwards from it. From near the same region a feeble ridge runs upwards and outwards on the moderately flat supra-occipital. The ex-occipital is somewhat massive, and its lateral portion stands out from the descending part of the squamosal, which it supports. The par-occipital processes though both broken off at the bases have evidently been unusually well developed.

On the inner side of the quadrate and practically on the suture between it and the ex-occipital is to be seen the *columella auris*. The outer part is a cylindrical rod of about 2 mm. in diameter, but on passing inwards, forwards, and upwards it becomes somewhat flattened and very much thicker. Its total length has probably been about 40 mm. A little farther out than the broken outer end of the *columella auris*, and resting on the posterior side of the quadrate, are indications of an additional bony element, but the fragment which is left is too small and imperfect to give any certain indications as to the nature of the structure. It may be the fragment of a malleus, or it may be, as seems to me the more probable, the remains of an ossified tympanic ring.

UDENODON TRUNCATUS, n. sp. (Plate X., fig. 4.)

This species is founded on the anterior portion of a skull belonging to the Port Elizabeth Museum. There is no history attached to the fossil, but there is some reason to believe that it came from Hanover. The fossil represents the almost perfect palate of a moderate-sized species of *Oudenodon*. The palate is so beautifully weathered that the sutures are quite distinctly shown. The premaxillary forms practically the whole of the bony roof of the mouth, almost completely covering the under surface of the maxillaries. The specimen further proves conclusively that the median ridge which has

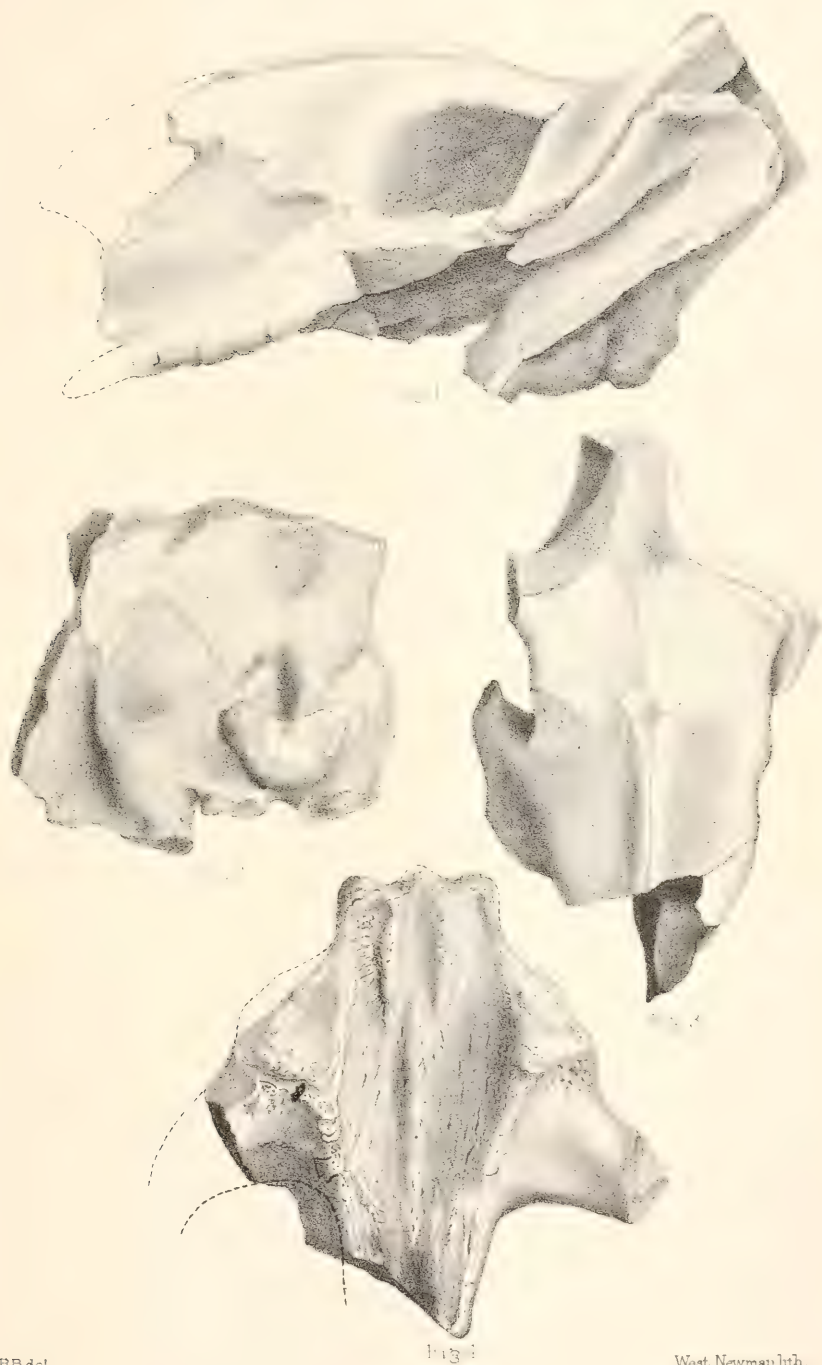
invariably, so far as I am aware, been regarded as the vomer, is really a part of the premaxillary. The true vomer is situated further back and comparatively small in *Oudenodon*, though well developed in *Ptychasiagum*. The chief characteristic of the species is that the beak is almost square, with a median and two lateral vertical ridges. Of described species the only one which might be similarly characterised is *Oudenodon megalops*, Owen, but in it the proportions of the palatal structures are very different. The present fossil, moreover, represents a form about twice the size of the type of *O. megalops*. The following are some of the principal measurements:—

Anterior end of beak to back of median ridge ...	113 mm.
Estimated width of palate	76 mm.
Width of point of beak.....	47 mm.

EXPLANATION OF PLATE X.

FIG.

1. Side view of skull of *Dicynodon latifrons* × '4
2. Occiput of " " × '36
3. Upper view of skull of " " × '36
4. Palate of *Oudenodon truncatus* × '46



RB del.

fig. 1

West, Newman lith.

Dicynodon latifrons. *n. sp.*

Oudenodon truncatus. *n. sp.*

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